WEST Search History

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DATE: Tuesday, November 16, 2004

Hide?	Set Name	Query	Hit Count
	DB=USPT; PLUR=YES; OP=AND		
☐	L1	bed near sore	1108
☐	L2	(botox or bo-tox or botulin or botulinum or botulism)	1391
☐	L3	(clostrid$ near3 $toxin) or neurotoxin or neuro-toxin or toxin or cytotoxin	22294
☐	L4	l1 same (l2 or L3)	9
☐	L5	(l2 or l3).clm. same (method or process).clm.	1392
☐	L6	L5 and (ulcer or decubit$ or skin).clm.	54
☐	L7	pressure.clm. same sore.clm.	64
☐	L8	L7 and l2.clm.	0
☐	L9	L7 and l3.clm.	2
☐	L10	pressure near3 sore	1023
☐	L11	L10 and (l2 or l3)	74
☐	L12	L10 same (l2 or l3)	1
☐	L13	L11 not l12	73
☐	L14	(bont or botx or botx-a or bont-a or botxa).clm. or l2.clm.	200
☐	L15	L14 and (ulcer or wound or skin or eyelid or eye or lid or scalp or feet or foot or groin or arm or armpit or bacteria or bacterial or fungus or fungal).clm.	55
☐	L16	bedsore.clm. same l2.clm.	0
☐	L17	ulcer.clm. same l2.clm.	1
☐	L18	L14 and (bedsore or ulcer or wound).clm. not l15	0
☐	L19	L18	0
☐	L20	chalazion	39
☐	L21	chalazion and (l2 or l14 or l3)	7
☐	L22	meibomian	135
☐	L23	L22 same (l2 or l3 or l14)	0
☐	L24	l14 and hordeola	0
☐	L25	l14 and sebaceous	2
☐	L26	l14 and (mucos$ or mucous$).clm.	4
☐	L27	5670484.pn.	1

END OF SEARCH HISTORY

SYSTEM:OS - DIALOG OneSearch
File 155:MEDLINE(R) 1951-2004/Nov W2
(c) format only 2004 The Dialog Corp.
*File 155: Medline will stop updating COMPLETED records on November 17, 2004. Please see HELP NEWS 155 for details.
File 5:Biosis Previews(R) 1969-2004/Nov W1
(c) 2004 BIOSIS
File 34:SciSearch(R) Cited Ref Sci 1990-2004/Nov W2
(c) 2004 Inst for Sci Info
File 35:Dissertation Abs Online 1861-2004/Oct
(c) 2004 ProQuest Info&Learning
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2001 (c) Action Potential
File 94:JICST-EPlus 1985-2004/Oct W3
(c)2004 Japan Science and Tech Corp(JST)
File 98:General Sci Abs/Full-Text 1984-2004/Sep
(c) 2004 The HW Wilson Co.
File 135:NewsRx Weekly Reports 1995-2004/Nov W1
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*File 135: New newsletters are now added. See Help News135 for the complete list of newsletters.
File 144:Pascal 1973-2004/Nov W1
(c) 2004 INIST/CNRS
File 149:TGG Health&Wellness DB(SM) 1976-2004/Oct W4
(c) 2004 The Gale Group
File 156:ToxFile 1965-2004/Nov W2
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*File 156: ToxFile now reloaded with 2004 MeSH.
Enter Help News156 for more information.
File 159:Cancerlit 1975-2002/Oct
(c) format only 2002 Dialog Corporation
*File 159: Cancerlit is no longer updating.
Please see HELP NEWS159.
File 162:Global Health 1983-2004/Oct
(c) 2004 CAB International
File 164:Allied & Complementary Medicine 1984-2004/Nov
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File 172:EMBASE Alert 2004/Nov W1
(c) 2004 Elsevier Science B.V.
File 266:FEDRIP 2004/Aug
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(c) 2004 Reed Business Information Ltd.
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(c) 1999 AAAS
*File 370: This file is closed (no updates). Use File 47 for more current information.
File 399:CA SEARCH(R) 1967-2004/UD=14121
(c) 2004 American Chemical Society
*File 399: Use is subject to the terms of your user/customer agreement.
Alert feature enhanced for multiple files, etc. See HELP ALERT.
File 434:SciSearch(R) Cited Ref Sci 1974-1989/Dec
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File 444:New England Journal of Med. 1985-2004/Nov W1
(c) 2004 Mass. Med. Soc.
File 467:ExtraMED(tm) 2000/Dec
(c) 2001 Informania Ltd.
*File 467: F467 no longer updates; see Help News467.

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      Set  Items  Description
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Cost is in DialUnits
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Set     Items   Description
S1        139   'PRESSURE SORE'
S2        198   'PRESSURE SORES'
S3       7447   PRESSURE? (2N) SORE?
S4       3677   BEDSORE?
S5      15117   R1:R4
S6      20823   S1 OR S2 OR S3 OR S4 OR S5
S7      59388   BOTUL?
S8       3366   R1:R2
S9       3882   BOTOX?
S10      9773   'CLOSTRIDIUM BOTULINUM'
S11       144   'BOTULINUM TOXINS'
S12      6310   'BOTULINUM TOXINS'
S13     54825   R1:R13
S14     97855   S7 OR S8 OR S9 OR S10 OR S11 OR S12 OR S13
S15        22   S6 AND S14
S16        20   RD (unique items)
?t s16/9/1-7, 10-20

 16/9/1     (Item 1 from file: 155)
DIALOG(R)File 155:MEDLINE(R)
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15757833   PMID: 14636486
  Treatments for spasticity and pain in multiple sclerosis: a systematic
review.
  Beard S; Hunn A; Wight J
  School of Health and Related Research (ScHARR), University of Sheffield,
UK.
  Health technology assessment (Winchester, England) (England) 2003, 7
 (40) piii, ix-x, 1-111, ISSN 1366-5278 Journal Code: 9706284
  Document type: Journal Article; Review; Review, Academic
  Languages: ENGLISH
  Main Citation Owner: NLM
  Record type: Completed
  Subfile:   INDEX MEDICUS
  OBJECTIVES: To identify the drug treatments currently available for the
management of spasticity and pain in multiple sclerosis (MS), and to
evaluate their clinical and cost-effectiveness. DATA SOURCES: Electronic
bibliographic databases, National Research Register, MRC Clinical Trials
Register and the US National Institutes of Health Clinical Trials Register.
REVIEW METHODS: Systematic searches identified 15 interventions for the
treatment of spasticity and 15 interventions for treatment of pain. The
quality and outcomes of the studies were evaluated. Reviews of the
treatment of spasticity and pain when due to other aetiologies were also
sought. RESULTS: There is limited evidence of the effectiveness of four
oral drugs for spasticity: baclofen, dantrolene, diazepam and tizanidine.
Tizanidine appears to be no more effective than comparator drugs such as
baclofen and has a slightly different side-effects profile. Despite claims
that it causes less muscle weakness, there was very little evidence that
tizanidine performed any better in this respect than other drugs, although
it is more expensive. The findings of this review are consistent with
reviews of the same treatments for spasticity derived from other
aetiologies. There is good evidence that both botulinum toxin (BT) and
intrathecal baclofen are effective in reducing spasticity, and both are
associated with functional benefit. However, they are invasive, and
substantially more expensive. None of the studies included in the review of
pain were designed specifically to evaluate the alleviation of pain in
patients with MS and there was no consistency regarding the use of
validated outcome measures. It was suggested that, although expensive, the
use of intrathecal baclofen may be associated with significant savings in
hospitalisation costs in relation to bed-bound patients who are at risk of
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developing **pressure sores**, thus enhancing its cost-effectiveness. No studies of cost-effectiveness were identified in the review of pain. There is evidence, albeit limited, of the clinical effectiveness of baclofen, dantrolene, diazepam, tizanidine, intrathecal baclofen and BT and of the potential cost-effectiveness of intrathecal baclofen in the treatment of spasticity in MS. CONCLUSIONS: Many of the interventions identified are not licensed for the alleviation of pain or spasticity in MS and the lack of evidence relating to their effectiveness may also limit their widespread use. Indeed, forthcoming information relating to the use of cannabinoids in MS may result in there being better evidence of the effectiveness of new treatments than of any of the currently used drugs. It may therefore be of value to carry out double-blind randomised controlled trials of interventions used in current practice, where outcomes could include functional benefit and impact on quality of life. Further research into the development and validation of outcomes measures for pain and spasticity may also be useful, as perhaps would cost-utility studies. (154 Refs.)

Tags: Comparative Study; Human

Descriptors: *Multiple Sclerosis--physiopathology--PP; *Muscle Spasticity --drug therapy--DT; *Pain--drug therapy--DT; Adolescent; Adult; Clinical Trials; Cost-Benefit Analysis; Evidence-Based Medicine; Great Britain; Middle Aged; Multiple Sclerosis--complications--CO; Muscle Relaxants, Central--therapeutic use--TU; Muscle Spasticity--etiology--ET; Pain --etiology--ET; Treatment Outcome

CAS Registry No.: 0 (Muscle Relaxants, Central)

Record Date Created: 20031125

Record Date Completed: 20040304

16/9/2 (Item 1 from file: 34)

DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

08338374 Genuine Article#: 272YD Number of References: 38

Title: Rehabilitation after traumatic brain injury

Author(s): Barnes MP (REPRINT)

Corporate Source: UNIV NEWCASTLE UPON TYNE,HUNTERS MOOR REG NEUROREHABIL CTR, ACAD UNIT NEUROL REHABIL, HUNTERS RD/NEWCASTLE UPON TYNE NE2 4NR/TYNE & WEAR/ENGLAND/ (REPRINT)

Journal: BRITISH MEDICAL BULLETIN, 1999, V55, N4, P927-943

ISSN: 0007-1420 Publication date: 19990000

Publisher: ROYAL SOC MEDICINE PRESS LTD, 1 WIMPOLE STREET, LONDON W1M 8AE, ENGLAND

Language: English Document Type: ARTICLE

Geographic Location: ENGLAND

Subfile: CC LIFE--Current Contents, Life Sciences; CC CLIN--Current Contents, Clinical Medicine;

Journal Subject Category: MEDICINE, GENERAL & INTERNAL

Abstract: Head injury is a common disabling condition but regrettably facilities for rehabilitation are sparse. There is now increasing evidence of the efficacy of a comprehensive multidisciplinary rehabilitation team compared to natural recovery following brain injury. This chapter outlines some basic concepts of rehabilitation and emphasises the importance of valid and reliable outcome measures. The evidence of the efficacy of a rehabilitation programme is discussed in some detail. A number of specific rehabilitation problems are outlined including the management of spasticity, nutrition, **pressure sores** and urinary continence. The increasingly important role of assistive technology is illustrated, particularly in terms of communication aids and environmental control equipment. However, the major long-term difficulties after head injury focus around the cognitive, intellectual, behavioural and emotional problems. The complex management of these disorders is briefly addressed and the evidence of the efficacy of some techniques discussed. The importance of recognition of the vegetative state and avoidance of misdiagnosis is emphasised. Finally, the important, but often neglected, area of employment rehabilitation is covered.

Identifiers--KeyWord Plus(R): UPPER EXTREMITY SPASTICITY; SEVERE

Previous Doc Next Doc Go to Doc#
First Hit Fwd Refs

Generate Collection

L15: Entry 18 of 55 File: USPT Sep 10, 2002

DOCUMENT-IDENTIFIER: US 6447787 B1
TITLE: Methods for enhancing wound healing

CLAIMS:

1. A method for treating a patient having an acute skin wound, said method comprising locally administering an amount of botulinum toxin in or in close proximity to said acute skin wound, such that healing of said skin wound is enhanced.

2. The method of claim 1, wherein said botulinum toxin is selected from the group consisting of botulinum toxin A, B, C, D, E, F, and G.

3. The method of claim 2, wherein said botulinum toxin is botulinum toxin A.

4. The method of claim 2, wherein said botulinum toxin is botulinum toxin B.

6. The method of claim 5, wherein said botulinum toxin is subcutaneously injected.

7. The method of claim 5, wherein said botulinum toxin is intramuscularly injected.

8. The method of claim 5, wherein said botulinum toxin is percutaneously instilled.

14. The method of claim 9, wherein said botulinum toxin and local anesthetic are co-administered.

18. The method of claim 17, wherein said local anesthetic and said vasoconstrictive agent are administered prior to said botulinum toxin.

19. The method of claim 1, wherein said acute skin wound is a facial wound.

20. The method of claim 1, wherein said acute skin wound is a surgically introduced incision.

21. The method of claim 20, wherein said botulinum toxin is administered prior to making said surgically introduced incision.

22. The method of claim 20, wherein said botulinum toxin is administered while making said surgically introduced incision.

23. The method of claim 20, wherein said botulinum toxin is administered after said surgically introduced incision has been made.

24. The method of claim 1, wherein said acute skin wound is traumatically introduced.

25. The method of claim 1, wherein said acute skin wound is a favorable wound.

26. The method of claim 1, wherein said acute skin wound is an unfavorable wound.

27. The method of claim 1, wherein said acute skin wound comprises subcutaneous tissue.

28. The method of claim 1, wherein said acute skin wound is a head wound.

29. An article of manufacture comprising packaging material and an amount of a botulinum toxin, wherein said packaging material comprises a label that indicates said botulinum toxin is useful for treating a patient having an acute skin wound, and wherein local administration of said amount of said botulinum toxin enhances healing of said skin wound.

30. The article of manufacture of claim 29, wherein said botulinum toxin is botulinum toxin A.

31. The article of manufacture of claim 29, wherein said botulinum toxin is botulinum toxin B.

Previous Doc Next Doc Go to Doc#

thereby reducing a cholinergic influenced glucagon secretion from the pancreatic tissue and treating hyperglycemic hyperglucagonism.

29. A method for treating pain associated with pancreatitis, the method comprising the step of local administration of a botulinum toxin to an endocrine pancreatic tissue and/or to an exocrine pancreatic tissue of a patient, thereby reducing pain associated with pancreatitis.

30. A method for improving patient function, the method comprising the step of local administration of a botulinum toxin to the endocrine and/or exocrine pancreatic tissue of a human patient, thereby improving patient function as determined by improvement in one or more of the factors of reduced pain, reduced time spent in bed, improved healing, and increased ambulation.

Previous Doc Next Doc Go to Doc#

R
Preventy
pressure
sore

10/814,764

Previous Doc Next Doc Go to Doc#
First Hit Fwd Refs

Generate Collection

L15: Entry 36 of 55 File: USPT Nov 7, 2000

DOCUMENT-IDENTIFIER: US 6143306 A
TITLE: Methods for treating pancreatic disorders

CLAIMS:

6. The method of claim 1, wherein the neurotoxin is made by a Clostridial bacterium.

7. The method of claim 1, wherein the neurotoxin is made by a bacterium selected from the group consisting of Clostridium botulinum, Clostridium butyricum, Clostridium beratti.

13. The method of claim 1, wherein the neurotoxin is a botulinum toxin.

14. The method of claim 1, wherein the botulinum toxin is selected from the group consisting of botulinum toxin types A, B, C.sub.1, D, E, F and G.

15. The method of claim 1, wherein the neurotoxin is botulinum toxin type A.

17. A method for treating a pancreatic disorder, the method comprising the step of injecting a therapeutically effective amount of a botulinum toxin into an endocrine pancreatic tissue and/or to an exocrine pancreatic tissue of a human patient, thereby reducing a secretion from a pancreatic cell and treating a pancreatic disorder.

22. The method of claim 20, wherein the botulinum toxin is injected into the tail of the pancreas.

24. The method of claim 17, wherein the botulinum toxin is botulinum toxin type A.

25. The method of claim 17, wherein the botulinum toxin is selected from the group consisting of botulinum toxin types A, B, C, D, E, F and G.

26. A method for treating a pancreatic disorder of a human patient, the method comprising the step of local administration to a cholinergic influenced pancreatic tissue of a human patient of a therapeutically effective amount of botulinum toxin type A, thereby reducing a cholinergic influenced secretion from the pancreatic tissue and treating the pancreatic disorder.

27. A method for treating hypoglycemic hyperinsulinism, the method comprising the step of injecting a cholinergic nervous system influenced pancreatic tissue of a human patient with a therapeutically effective amount of botulinum toxin type A, thereby reducing a cholinergic influenced insulin secretion from the pancreatic tissue and treating hypoglycemic hyperinsulinism.

28. A method for treating hyperglycemic hyperglucagonism, the method comprising the step of injecting a cholinergic nervous system influenced pancreatic tissue of a human patient with a therapeutically effective amount of botulinum toxin type A,

1: Clin Dermatol. 2004 Jan-Feb;22(1):89-93. Related

FULL-TEXT ARTICLE

Botox: beyond wrinkles.

Carruthers J, Carruthers A.

Department of Ophthalmology, University of British Co of Medicine, Vancouver, British Columbia, Canada. drjean@carruthers.net

First used and approved over a decade ago for the trea strabismus (or misaligned eyes), botulinum toxin (BTX) h demonstrated efficacy in blepharospasm, hemifacial spa lower eyelid entropion, and a number of other disorders traditional medical environment that are characterized muscle contraction. Moreover, other conditions-notably gastrointestinal disorders-have responded to BTX injec

Publication Types:

- Review
- Review, Tutorial

PMID: 15158551 [PubMed - indexed for MEDLINE]

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Related Resources

NCBI PubMed

Entrez PubMed Nucleotide Protein Genome Structure OMIM PMC Journal

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Display Abstract Show: 20 Sort Send

1: Plast Reconstr Surg. 1998 Sep;102(3):918. Related

LWWonline

Botox use in prevention of dry eyes.

Benvenuti D.

Publication Types:

- Letter

PMID: 9727468 [PubMed - indexed for MEDLINE]

Entrez PubMed

PubMed Services

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Related Resources

1: Arch Soc Esp Oftalmol. 2003 Jan;78(1):9-14. Related

[Botulinum toxin as a treatment for strabismu diseases]

[Article in Spanish]

Moguel-Ancheita S, Dixon-Olvera S, Martinez-Orope Orozco-Gomez LP.

Centro Medico Nacional "20 de Noviembre", ISSSTE, M

PURPOSE: To demonstrate the effectiveness of botulin treating strabismus secondary to systemic diseases. MA METHODS: 141 patients with secondary strabismus wer reduce risks, the treatment with botulinum toxin was m technique proposed by the authors. The response to the was classified according to the different physiopathoge RESULTS: We found a positive response in: Central Neu damage: 71%, Endocrinopathies: 78.6%, Brain infection: 60%, Psychomotor defficiency: 72%, Prematurity: 74%, 75%, Hemathological diseases: 75%. The average of bot applications was 1.5 infections. CONCLUSIONS: We sho effectiveness of botulinum toxin in strabismus secondar disease is up to 74%. We can offer rehabilitation in all o even during the sometimes long diagnostic period or in p treatment. We also suggest our direct technique for th

botulinum toxin (without electromyography) to avoid ris
of patients. We are reporting the use and positive effec
botulinum toxin chemodenervation in Myasthenia gravis,
Acquired Immune-deficiency Syndrome, and mental def

PMID: 12571768 [PubMed - indexed for MEDLINE]

Display Abstract Show: 20 Sort Send

Nov 8 2004 18:23:56

postinjury," Dr. McDonald explained. "Not only did the FES therapy restore a 20-point increase in this person's motor function, but it also returned the light-touch sensation score to 80 and the pinprick sensation to 50."

Dr. McDonald was about to begin a broader clinical trial with 120 patients. They will take part in using FES bicycles at his lab, but he hopes to increase participation by getting some of the bicycles into patients' homes, which previously had been cost prohibitive.

The bicycle was designed in the late 1970s for acutely injured people who might be able to recover in the first couple of months. It was not intended for individuals who have had injuries for a long time. Only about 700 of the devices have been produced in the past 25 years, and they are priced at $14,000-$16,000 each. Dr. McDonald is working with a manufacturing group to redesign the bicycle and reduce the cost by as much as 50%.

Patrick Rummerfield, director of performance assessment for the SCI program at Washington University School of Medicine, says there's a huge potential cost savings for insurance companies because of the FES bicycle therapy's physical benefits. These include building muscle mass and preventing skin breakdown, decreasing spasms that are typically treated with medication, building bone density to prevent osteoporosis and bone fractures, and enhancing blood flow and cardiovascular activity.

"One bone fracture costs $70,000 for hospital treatment," Rummerfield says. "Skin breakdown can cost $60,000. A bladder infection can run in the tens of thousands of dollars. If you can get the cost down, hopefully the insurance companies will realize this is saving them a lot of money."

Rummerfield says Dr. McDonald's work is "light years ahead of anything that's ever been produced."

So far, funding has come primarily from private donations. Dr. McDonald has applied for federal grants and for one from the Christopher Reeve Paralysis Foundation. The research project will cost about $750,000 a year.

This article appeared in the February/March 2003 issue of OPVA's Paralog and is used by permission. For more information about the trials, visit www.neuro.wustl.edu/sci.

Jerry D. Ryan, M.S., holds a master's degree in natural health and, with the help of PVA scholarships for two years, is finishing a Ph.D. As Oregon PVA's hospital liaison, he is on the Portland VAMC's Institutional Review Board, which reviews all human-subject research experiments. He is also a member of the VISN Alternative Health Advisory Committee, a panel tasked with educating physicians, staff, and patients on various aspects of complementary medicine.

DESCRIPTORS: National Spinal Cord Injury Association--Conferences, meetings, semina; Holistic medicine--Health aspects; Holistic medicine--History; Hypnotism--Health aspects; Spinal cord injuries--Care and treatment
GEOGRAPHIC CODES/NAMES: 1U8AZ Arizona
FILE SEGMENT: HI File 149

16/9/19 (Item 8 from file: 149)
DIALOG(R)File 149:TGG Health&Wellness DB(SM)

01901046 SUPPLIER NUMBER: 61616797 (THIS IS THE FULL TEXT)
CLINICAL RESEARCH.
Paraplegia News, 54, 4, 30
April,
2000
PUBLICATION FORMAT: Magazine/Journal ISSN: 0031-1766 LANGUAGE: English
RECORD TYPE: Fulltext TARGET AUDIENCE: Academic; Professional
WORD COUNT: 456 LINE COUNT: 00041

TEXT:

"Treatment of Pressure Ulcers in Spinal Cord Injury Patients"
Dorne Yager, Ph.D. Virginia Commonwealth University Richmond, Va.

$79,032 (one year)

Pressure ulcers are one the most debilitating and costly complications of spinal-cord dysfunction (SCD) and other conditions leading to immobility. Although pressure ulcers are typically difficult to treat, recent research suggests that an abnormal immune response may play a role in the delayed healing of these ulcers. Specifically, cells called neutrophils, normally responsible for clearing debris from an area of injury, may linger in a pressure ulcer and release compounds that further destroy the skin tissue. Recent data suggests that some antibiotics may inhibit the movement of neutrophils into an area of tissue injury as well as the destructive compounds they produce.

Project goal: To determine whether antibiotics can successfully treat pressure ulcers, and whether natural agents in the blood can also reduce tissue destruction in pressure ulcers.

"Improving Tissue Viability of Paralyzed Muscle with NMES"

Ronald J. Triolo, Ph.D. Case Western Reserve University Cleveland $40,257 (one year)

A major secondary complication of spinal-cord injury (SCI), pressure ulcers can have serious adverse effects on people's psychological and physical well-being. They are also expensive, requiring long periods of bed rest and possible surgery for successful healing. Methods of prevention have tended to concentrate on devices such as support cushions and reclining wheelchairs. Neuromuscular electrical stimulation (NMES) is a method of changing the characteristics of paralyzed muscles so the response to long-term pressure, particularly from sitting in a wheelchair, may be improved. The primary site for pressure ulcers in the SCI population is in the hip region.

Project goal: To evaluate NMES's effectiveness in improving the properties of paralyzed muscle in order to reduce incidence of pressure ulcers in the SCI population.

"Use of **Botulinum** : A Toxin for the Treatment of Detrusor-Sphincter Dyssynergia in Spinal Cord Injury Patients"

Regina Hovey, M.D. Long Beach VA Medical Center Long Beach, Calif. $114,045 (three years)

People with SCI can experience a variety of problems with urinary-tract function. One involves the bladder's failure to be properly coordinated with the muscular sphincter that allows urine to pass out of the body. This detrusorsphincter dyssynergia (DSD) can cause high bladder pressure, poor bladder emptying, and possible kidney damage.

Project goal: To evaluate the usefulness of a chemical called **botulinum** A toxin to treat this condition. This toxin can be deadly, but when injected into muscles in tiny amounts, it causes only temporary paralysis of that muscle. Thus, it may be useful in relaxing the urinary sphincter to improve the ability to urinate.

DESCRIPTORS: **Bedsores** --Care and treatment; Electric stimulation--Therapeutic use; **Botulinum** toxin--Therapeutic use
FILE SEGMENT: HI File 149

16/9/20 (Item 9 from file: 149)
DIALOG(R)File 149:TGG Health&Wellness DB(SM)

01724903 SUPPLIER NUMBER: 19908357 (THIS IS THE FULL TEXT)
Multiple sclerosis, spasticity and treatment. (includes related article)(Current Treatments for Spasticity)
Holland, Nancy; Roberts, Jo
The Exceptional Parent, v27, n9, p87(2)
Sep,
1997
PUBLICATION FORMAT: Magazine/Journal ISSN: 0046-9157 LANGUAGE: English
RECORD TYPE: Fulltext TARGET AUDIENCE: Consumer
WORD COUNT: 1206 LINE COUNT: 00101

TEXT:

Multiple sclerosis (MS) is an auto-immune disease in which a person's immune system turns against his or her own central nervous system. It can damage the spinal cord, optic nerves and brain, including the structures such as the cerebellum and brain stem. Usually diagnosed when a person is between 20 and 40, MS also occurs in children and teens, but much less often. spasticity from ms is uncommon in adolescents. Spasticity from MS in children is rare.

The disease is unpredictable. symptoms vary enormously from person to person and often fluctuate over time. Most common are impairments of vision, walking, bladder and bowel function, and overwhelming fatigue unrelated to rest and activity.

One or more symptoms can arise suddenly, last a few days or weeks, then gradually improve and disappear. These flare-ups or relapses can be neither predicted nor prevented. Some people with MS experience only one or two flare-upsthroughout their lives, but the more common situation is two to three relapses per year.

Early in the disease, symptoms often remit completely after a relapse. Although the frequency of flare-ups decreases with age, the tendency for symptoms to clear up completely also decreases.. In about 50 percent of cases, this relapsing-remitting cycle develops into a progressive form of the disease in which symptoms are more likely to be persistent.

Each individual's symptoms, situation and needs are different and may change often. Fatigue is common among people with MS, and often very debilitating. Because of this fatigue, employment, parenting, housework and community service can become difficult to carry out.

MS can also dull the sensations that cue people to shift positions when sitting or lying down. **Pressure sores** may form and are prone to infection. Sores and infections send reflex messages to the spinal cord which result in increased muscle tone (spasticity).

MS and spasticity

Spasticity -- involuntary muscle stiffness or spasms -- occurs in about 80 percent of people with MS. Although the disease is usually active at all times, the spasticity may come and go.

Two types of severe spasticity occur in people with MS: flexor and extensor. Flexor spasticity is primarily involuntary bending of the legs at the hips and knees, with a knee-to-chest movement. Extensor spasticity straightens the legs without voluntary control. Both types may make walking difficult and painful, or cause considerable discomfort to the person using a wheelchair for mobility. Spasticity in the arms is much less common.

Treating spasticity can be difficult. Medication that relieves stiffness can make the leg loose, taking away the "splinting" that sometimes is needed to walk or do wheelchair transfers.

Also, spasticity may fluctuate and its severity can change suddenly due to infection, constipation, weather extremes and other factors.

MS and treatment

The first order of business for treatment is physical therapy (PT) -- especially gentle stretching and aquatic therapy. PT is both useful in reducing spasticity and helpful in improving muscle tone if begun before spasticity has become severe.

Second in line are oral medications. Baclofen (Lioresal(R)), taken orally approximately three to four times a day, works in the spinal cord and is frequently used. Individuals, monitored closely by experts, are sometimes taught to adjust their own oral doses. Thus, people can have some sense of control as they deal with an unpredictable disease. The drug has proven safe with long-term use in people with MS.

Diazepam (Valium(R)) and dantrolene sulfate (Dantrium(R)) can also be used alone or in combination with other antispasticity drugs. Due to undesirable side effects, they are typically used only when other oral medications have proven ineffective. Diazepam can cause unwanted drowsiness and dependency with long-term use; dantrolene might cause liver damage, blood abnormalities and other problems requiring regular monitoring of liver function via blood tests.

In December 1996, the Food and Drug Administration approved a new oral medication for muscle spasticity associated with MS and spinal cord injury. Tizanidine hydrochloride, marketed under the brand name Zanaflex(R), has common side effects that include dry mouth, tiredness and

occasional risk of liver damage. At the present time, tizanidine has not been fully evaluated for pediatric use.

When oral agents are ineffectual at very high doses, alternatives exist in the form of in-dwelling delivery systems, such as the baclofen pump. The pump delivers baclofen directly into the fluid surrounding the spinal cord. It is very effective and is reserved for individuals with severe chronic spasticity or for those not helped by injections or oral drugs, or experiencing intolerable side effects.

Nancy Holand is Vice President of the Clinical Programs Dept. of the National Multiple Sclerosis Society, New York City.

Things Are Really Changing

Seventeen years ago our son Bruce, now 35, was seriously injured in an automobile accident. He had a massive head injury, swelling in the brain and damage to the brain stem. After a six-month coma, he was left with spastic quadriparesis, weakening of the entire body without paralysis. His body was rigid and he couldn't move, point or hold up his head. He also lost the ability to speak but did not lose his memory or the ability to think. He retained his spelling and language skills, as well as his sense of humor and quuiet determination to succeed.

Bruce has lived at home with us for most of his recovery. We are fortunate to live near a rehabilitation institute, where Bruce has taken advantage of all the traditional methods of treating spasticity; drugs, surgery, electrical stimulation, serial casting, physical, occupational and speech therapy.

Over the years, Bruce has progressed an inch at a time. He gained functional use of his left arm and became fluent with a communication device. However, it remained difficult and unsafe for him to transfer into and out of his wheelchair. He required major assistance from family members or attendants. His instability and large size made it hard for others to pull him into a standing position for dressing. The clonus (shaking) in his legs even made it necessary for him to wear toe straps to keep his feet on the wheelchair footplates.

Last fall, Bruce received **Botox** (R) injections to reduce the severe spasticity in his right arm. The result was dramatic, although temporary. At that time, the baclofen pump was discussed as a possible permanent solution, largely with the goal of making transfers easier.

Recently, Bruce received his ITB pump. After recovering from its insertion, he completed an intensive three-week session of physical and occupational therapy and in a short time we saw encouraging results. His need for toe straps disappeared and he became almost independent with his wheelchair transfers.

Long-dormant muscles now seem to be waking up. Bruce's legs are getting stronger and he is able to take a few assisted steps. He can swallow more easily, sit straighter and more comfortably in his wheelchair and there is a new calmness to his manner. "I don't know how I got along for 17 years without my pump," h e says.

Bruce is a testimonial to medical research and to one young man's never-give-up attitude.

SPECIAL FEATURES: photograph; table; illustration
DESCRIPTORS: Spasticity--Care and treatment; Multiple sclerosis--Care and treatment
FILE SEGMENT: HI File 149

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    $0.01  Estimated cost File35
           $0.01    0.003 DialUnits File48
    $0.01  Estimated cost File48
           $0.01    0.003 DialUnits File65
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           $0.02    0.003 DialUnits File71
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           $0.13    0.013 DialUnits File73
             $16.20  6 Type(s) in Format  9
          $16.20  6 Types
   $16.33  Estimated cost File73
           $0.01    0.003 DialUnits File91
    $0.01  Estimated cost File91
           $0.01    0.003 DialUnits File94
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           $0.01    0.003 DialUnits File144
    $0.01  Estimated cost File144
           $4.48    1.017 DialUnits File149
             $31.05  9 Type(s) in Format  9
          $31.05  9 Types
   $35.53  Estimated cost File149
           $0.01    0.003 DialUnits File156
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    $0.02  Estimated cost File467
           OneSearch, 26 files,  1.100 DialUnits FileOS
    $0.24  TELNET
   $64.66  Estimated cost this search
   $64.66  Estimated total session cost   1.100 DialUnits


### Status: Signed Off. (1 minutes)
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HEAD-INJURY; EARLY INTERVENTION; CONTROLLED TRIAL; **BOTULINUM** TOXIN; FOLLOW-UP; RELATIVES; EFFICACY

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16/9/3 (Item 2 from file: 34)

DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

07692747 Genuine Article#: 197GQ Number of References: 41

Title: Intrathecal baclofen therapy for spasticity of cerebral origin: Cerebral palsy and brain injury

Author(s): Nuttin B (REPRINT) ; Ivanhoe C; Albright L; Dimitrijevic M; Saltuari L

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Journal Subject Category: CLINICAL NEUROLOGY; MEDICINE, RESEARCH & EXPERIMENTAL

Abstract: Spasticity affects approximately 66% of individuals with cerebral palsy and 14% of the 100,000 individuals who, each year, experience brain injury in the US. This spasticity interferes with motor function

and limits range of motion. It may cause pain and impede mobility, transfers, activities of daily living, sitting posture, and sleep. In addition, spasticity can contribute to the formation of **pressure sores** and joint contractures and make nursing or caregiving difficult. Several treatment options are available for intractable spasticity. For some diagnoses, oral medications are-still the treatment of choice, while in other settings injection therapy may be more appropriate. If, however, they are ineffective or cause too many side effects, intrathecal baclofen therapy (ITB) may be a valuable alternative. ITB is effective, nondestructive, titratable, and reversible; in addition, it is associated with fewer CNS-related side effects than oral Lioresal (Novartis Pharma AG, Basel, Switzerland). Intrathecal baclofen therapy may improve range of motion, facilitate movement, reduce the patient's expenditure of energy, facilitate nursing, reduce the risk of developing contractures; and,in some cases,diminish pain resulting from spasticity and/or spasms; It also may improve speech, gait, upper extremity function, and activities of daily living, including communication, eating, dressing, hygiene, and other aspects of self-care. A recent study shows that treatment with intrathecal baclofen reduces the need for corrective orthopedic surgeries. Patient selection should be done in a multidisciplinary spasticity setting, where the expertise for different treatment modalities is available; Patients must be screened for response to the drug prior to implantation of the drug delivery pump. Maintenance doses for intrathecal baclofen range from 22 to 1400 mu g/day, with most patients adequately maintained on 90-703 mu g/day. Complications, while rare, are most often related to the drug delivery catheter. Intrathecal baclofen treatment maybe-cost effective, primarily due to a reduced need for hospitalizations and treatment of adverse events related to uncontrolled spasticity, and may improve quality of life;

Intrathecal baclofen shows long-term efficacy in both higher and lower level patients with cerebral origin spasticity.

Descriptors--Author Keywords: baclofen ; brain injury ; cerebral palsy ; drug therapy ; intrathecal infusion ; stroke
Identifiers--KeyWord Plus(R): **BOTULINUM** TOXIN; SPINAL ORIGIN; DRUG-THERAPY; INFUSION; CHILDREN

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16/9/4 (Item 1 from file: 73)

12795165 EMBASE No: 2004389028

Epidural anesthesia as a technique to control spasticity after surgery in a patient with spinal cord injury [1]

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Plastic and Reconstructive Surgery (PLAST. RECONSTR. SURG.) (United States) 2003, 112/6 (1729-1730)
CODEN: PRSUA ISSN: 0032-1052
DOCUMENT TYPE: Journal ; Letter
LANGUAGE: ENGLISH
NUMBER OF REFERENCES: 3

DRUG DESCRIPTORS:
*baclofen--drug therapy--dt; *baclofen--intrathecal drug administration--tl ; *baclofen--oral drug administration--po; *anesthetic agent--drug combination--cb; *anesthetic agent--drug therapy--dt; *anesthetic agent --epidural drug administration--ei
phenol; **botulinum** toxin; morphine--drug therapy--dt; morphine --intrathecal drug administration--tl; diazepam--drug therapy--dt; diazepam --oral drug administration--po; clonidine--drug therapy--dt; clonidine --oral drug administration--po; lidocaine--drug combination--cb; lidocaine --drug therapy--dt; lidocaine--epidural drug administration--ei; ropivacaine--drug combination--cb; ropivacaine--drug therapy--dt; ropivacaine--epidural drug administration--ei
MEDICAL DESCRIPTORS:
*spinal cord injury; *epidural anesthesia; *spasticity--complication--co; * spasticity--drug therapy--dt; *plastic surgery
motor neuron disease--complication--co; flexion contracture--complication --co; **decubitus** --complication--co; **decubitus** --surgery--su; dorsal rhizotomy; tensor fascia lata muscle; skin transposition flap; sport injury ; quadriplegia; myotatic reflex; maintenance therapy; human; male; case report; adult; letter; priority journal
CAS REGISTRY NO.: 1134-47-0 (baclofen); 108-95-2, 3229-70-7 (phenol); 52-26-6, 57-27-2 (morphine); 439-14-5 (diazepam); 4205-90-7, 4205-91-8, 57066-25-8 (clonidine); 137-58-6, 24847-67-4, 56934-02-2, 73-78-9 (lidocaine); 84057-95-4 (ropivacaine)
SECTION HEADINGS:
008 Neurology and Neurosurgery
009 Surgery
024 Anesthesiology
037 Drug Literature Index

16/9/5 (Item 2 from file: 73)

12691316 EMBASE No: 2004291250

Comfort care in severely disabled multiple sclerosis patients

Rousseaux M.; Perennou D.
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Journal of the Neurological Sciences (J. NEUROL. SCI.) (Netherlands) 15 JUL 2004, 222/1-2 (39-48)
CODEN: JNSCA ISSN: 0022-510X
PUBLISHER ITEM IDENTIFIER: S0022510X04001029
DOCUMENT TYPE: Journal ; Review
LANGUAGE: ENGLISH SUMMARY LANGUAGE: ENGLISH
NUMBER OF REFERENCES: 93

Comfort may be considered as the material aspect of well-being, and its limitation, defined as discomfort, exacerbates both the patient's and caregivers' difficulties. Discomfort results from the interaction of a patient's environment, treatment, and from the nature and severity of elementary deficits, such as spasticity, ranges of motion, pain, postural disorders, motor deficit and fatigue, bladder problems, insufficient ventilatory control, and also psychological difficulties. Although discomfort reduction may represent a major challenge in disabled persons, discomfort is usually underestimated in the assessment of deficiencies, disabilities, handicap, and even in quality of life (QOL) estimations. In this paper, we explain why discomfort may be a crucial problem in severe multiple sclerosis (MS) and argue for a systematic assessment of discomfort in the follow-up of the disease, especially in the following domains: dressing, washing, maintaining posture in a wheelchair and bed, food intake, mastication and swallowing, bowel control, urinary and feces emission, and also sexual life. The way to enhance comfort in MS patients is then analyzed.

DRUG DESCRIPTORS:
baclofen--drug therapy--dt; dantrolene--drug therapy--dt; gabapentin--drug therapy--dt; tetrazepam--drug therapy--dt; diazepam--drug therapy--dt; tizanidine--drug therapy--dt; clonidine--drug therapy--dt; cyproheptadine --drug therapy--dt; clonazepam--drug therapy--dt; clonazepam--oral drug administration--po; carbamazepine--drug therapy--dt; **botulinum** toxin --drug therapy--dt; clomipramine--drug therapy--dt; amitriptyline--drug therapy--dt; misoprostol--drug therapy--dt; nonsteroid antiinflammatory agent--drug therapy--dt; calcitonin--drug therapy--dt; opiate--drug therapy --dt; glutethimide--drug therapy--dt; propranolol--drug therapy--dt; primidone--drug therapy--dt; ondansetron--drug therapy--dt; dolasetron mesilate--drug therapy--dt; 5 hydroxytryptophan--drug therapy--dt; 5 hydroxytryptophan--oral drug administration--po; buspirone--drug therapy --dt; buspirone--oral drug administration--po; amantadine--drug therapy--dt ; amantadine--oral drug administration--po; 4 aminopyridine--drug therapy --dt; 4 aminopyridine--oral drug administration--po; 3,4 diaminopyridine --drug therapy--dt; 3,4 diaminopyridine--oral drug administration--po; sildenafil--drug therapy--dt; sildenafil--oral drug administration--po; prostaglandin E1--drug therapy--dt; prostaglandin E1--intracavernous drug administration--ca; unindexed drug
MEDICAL DESCRIPTORS:
*disability; *multiple sclerosis; *patient care
disease severity; wellbeing; disease exacerbation; caregiver; environmental factor; spasticity--drug therapy--dt; spasticity--surgery--su; joint mobility; pain--drug therapy--dt; body posture; motor dysfunction; fatigue --drug therapy--dt; bladder disease--drug therapy--dt; lung ventilation; lung disease; mental disease; quality of life; follow up; wheelchair; food intake; mastication; swallowing; urinary excretion; feces; sexual behavior; cleaning; patient positioning; clinical feature; sleep disorder; skin disease--complication--co; **decubitus** --complication--co; osteoarthropathy --complication--co; orthosis; surgical technique; ataxia--drug therapy--dt; constipation; sexual dysfunction--drug therapy--dt; erectile dysfunction --drug therapy--dt; cognitive defect; visual disorder--drug therapy--dt; human; review; priority journal
CAS REGISTRY NO.: 1134-47-0 (baclofen); 14663-23-1, 7261-97-4 (dantrolene); 60142-96-3 (gabapentin); 10379-14-3 (tetrazepam); 439-14-5 (diazepam);

51322-75-9, 64461-82-1 (tizanidine); 4205-90-7, 4205-91-8, 57066-25-8 (clonidine); 129-03-3, 969-33-5 (cyproheptadine); 1622-61-3 (clonazepam) ; 298-46-4, 8047-84-5 (carbamazepine); 17321-77-6, 303-49-1 (clomipramine); 50-48-6, 549-18-8 (amitriptyline); 59122-46-2, 59122-48-4 (misoprostol); 12321-44-7, 21215-62-3, 9007-12-9 (calcitonin); 53663-61-9, 8002-76-4, 8008-60-4 (opiate); 77-21-4 (glutethimide); 13013-17-7, 318-98-9, 3506-09-0, 4199-09-1, 525-66-6 (propranolol); 125-33-7 (primidone); 103639-04-9, 116002-70-1, 99614-01-4 (ondansetron); 115956-13-3 (dolasetron mesilate); 4350-09-8, 56-69-9 (5 hydroxytryptophan); 33386-08-2, 36505-84-7 (buspirone); 665-66-7, 768-94-5 (amantadine); 1003-40-3, 504-24-5 (4 aminopyridine); 54-96-6 (3,4 diaminopyridine); 139755-83-2 (sildenafil); 745-65-3 (prostaglandin E1)

SECTION HEADINGS:
008 Neurology and Neurosurgery
037 Drug Literature Index

16/9/6 (Item 3 from file: 73)

12305151 EMBASE No: 2003408872

Aesthetic and reconstructive surgery in the aging patient

Allen D.B.
Dr. D.B. Allen, Div. of Plast. and Reconstr. Surgery, Department of Surgery, Alameda County Medical Center, 1411 E 31st St., Oakland, CA 94602 United States

Archives of Surgery (ARCH. SURG.) (United States) 01 OCT 2003, 138/10 (1099-1105)
CODEN: ARSUA ISSN: 0004-0010
DOCUMENT TYPE: Journal ; Review
LANGUAGE: ENGLISH SUMMARY LANGUAGE: ENGLISH
NUMBER OF REFERENCES: 20

Before discussing the many ways in which plastic surgeons interface with elderly patients, a preliminary question should be addressed: who are the elderly? Life expectancy continues to increase toward the maximum theoretical age of 120 years in humans. A life expectancy of only 21 years could be expected in the Bronze Age and 47 years in 1900. In 1998, the mean life expectancy was 72 years for men and 79 years for women. The number of centenarians in the United States is projected to increase from 60000 in 1998 to 200000 in 2020 and then to an incredible 5 million in 2046. Most recent studies arbitrarily designate "over 65" years as elderly, although it is clear that biological aging, which for so long eluded any attempt to quantify it, dwarfs chronological age in its overall reflection of an individual's health. Women aged 65 years can expect to have well over a fifth as many years remaining, and their objection to the designation of elderly is understandable.

DRUG DESCRIPTORS:
elastin--endogenous compound--ec; estrogen--endogenous compound--ec; fat --endogenous compound--ec; antibiotic agent--drug therapy--dt; albumin --endogenous compound--ec; prealbumin--endogenous compound--ec; contractile protein--endogenous compound--ec; **botulinum** toxin A--drug therapy--dt; hemoglobin--endogenous compound--ec; hydroxyproline--endogenous compound --ec; collagen--endogenous compound--ec; DNA--endogenous compound--ec; transferrin--endogenous compound--ec
MEDICAL DESCRIPTORS:
*plastic surgery; *esthetic surgery
life expectancy; ligament; platysma muscle; aging; face; body mass; skinfold thickness; plethysmography; subcutaneous fat; depression; obesity --surgery--su; liposuction; weight reduction; rhytidoplasty; actinic keratosis--surgery--su; skin cancer--surgery--su; skin cancer--therapy--th; cryotherapy; desiccation; curettage; breast reduction; breast reconstruction; osteomyelitis--complication--co; osteomyelitis--diagnosis --di; osteomyelitis--drug therapy--dt; osteomyelitis--surgery--su;

myocutaneous flap; fasciocutaneous flap; **decubitus** --disease management --dm; nutritional status; contracture--complication--co; contracture --etiology--et; contracture--surgery--su; contracture--therapy--th; muscle atrophy--prevention--pc; muscle atrophy--therapy--th; muscle spasm--drug therapy--dt; safety; immobilization; wound healing; human; review; priority journal
CAS REGISTRY NO.: 9007-58-3 (elastin); 93384-43-1 (**botulinum** toxin A); 9008-02-0 (hemoglobin); 51-35-4, 6912-67-0 (hydroxyproline); 9007-34-5 (collagen); 9007-49-2 (DNA); 82030-93-1 (transferrin
SECTION HEADINGS:
009 Surgery
020 Gerontology and Geriatrics
036 Health Policy, Economics and Management
037 Drug Literature Index

16/9/7 (Item 4 from file: 73)
DIALOG(R)File 73:EMBASE

11565805 EMBASE No: 2002137180
Medical issues that impact life care planning for spinal cord injury
Winkler T.
Dr. T. Winkler, Ozark Area Rehabilitation Services, Springfield, MO United States
Topics in Spinal Cord Injury Rehabilitation (TOP. SPINAL CORD INJ. REHABIL.) (United States) 2002, 7/4 (21-27)
CODEN: TSIRF ISSN: 1082-0744
DOCUMENT TYPE: Journal ; Review
LANGUAGE: ENGLISH
NUMBER OF REFERENCES: 10
BRAND NAME/MANUFACTURER NAME: fosamax; indocin; didronel; valium; zanaflex; florinef; proamatine; procardia; lovenox; oxandrin
DRUG DESCRIPTORS:
calcium--drug therapy--dt; calcium--oral drug administration--po; vitamin D --drug therapy--dt; vitamin D--oral drug administration--po; alendronic acid--drug therapy--dt; nonsteroid antiinflammatory agent--drug therapy--dt ; indometacin--drug therapy--dt; etidronic acid--drug therapy--dt; etidronic acid--pharmacology--pd; diazepam--drug therapy--dt; tizanidine --drug therapy--dt; **botulinum** toxin A--drug therapy--dt; fludrocortisone --drug therapy--dt; sodium chloride--drug therapy--dt; midodrine--drug therapy--dt; midodrine--pharmacology--pd; phenoxybenzamine--drug therapy --dt; nifedipine--drug therapy--dt; nifedipine--pharmacology--pd; enoxaparin--drug therapy--dt; anticoagulant agent--drug therapy--dt; laxative--drug therapy--dt; oxandrolone--drug therapy--dt; oxandrolone --pharmacology--pd
MEDICAL DESCRIPTORS:
*spinal cord injury--rehabilitation--rh; *treatment planning health program; patient counseling; patient education; musculoskeletal system; bone mineralization; osteoporosis--drug therapy--dt; osteoporosis --therapy--th; hormone substitution; weight bearing; heterotopic ossification--complication--co; heterotopic ossification--drug therapy--dt; heterotopic ossification--etiology--et; heterotopic ossification--therapy --th; treatment indication; repetitive strain injury--complication--co; repetitive strain injury--surgery--su; spasticity--drug therapy--dt; spasticity--etiology--et; **decubitus** --complication--co; **decubitus** --disease management--dm; **decubitus** --etiology--et; health care cost; cardiovascular risk; blood pressure regulation; heart arrhythmia --complication--co; hypotension--complication--co; hypotension--drug therapy--dt; autonomic dysreflexia--complication--co; autonomic dysreflexia --drug therapy--dt; autonomic dysreflexia--etiology--et; deep vein thrombosis--complication--co; deep vein thrombosis--drug therapy--dt; deep vein thrombosis--etiology--et; gastrointestinal disease--complication--co; gastrointestinal disease--drug therapy--dt; gastrointestinal disease --etiology--et; gastrointestinal disease--therapy--th; kidney disease --complication--co; metabolic disorder--complication--co; metabolic disorder--drug therapy--dt; metabolic disorder--etiology--et; human; review

DRUG TERMS (UNCONTROLLED): oxandrin
CAS REGISTRY NO.: 7440-70-2 (calcium); 66376-36-1 (alendronic acid); 53-86-1, 74252-25-8, 7681-54-1 (indometacin); 2809-21-4, 3794-83-0, 58449-82-4, 7414-83-7 (etidronic acid); 439-14-5 (diazepam); 51322-75-9, 64461-82-1 (tizanidine); 93384-43-1 (**botulinum** toxin A); 127-31-1 (fludrocortisone); 7647-14-5 (sodium chloride); 3092-17-9, 42794-76-3 (midodrine); 59-96-1, 63-92-3 (phenoxybenzamine); 21829-25-4 (nifedipine); 9041-08-1 (enoxaparin); 53-39-4 (oxandrolone
SECTION HEADINGS:
005 General Pathology and Pathological Anatomy
017 Public Health, Social Medical and Epidemiology
033 Orthopedic Surgery
036 Health Policy, Economics and Management
037 Drug Literature Index

16/9/10 (Item 7 from file: 73)
DIALOG(R)File 73:EMBASE

05628195 EMBASE No: 1994031497
Toxinology of a bovine paraplegic syndrome
Sevcik C.; Brito J.C.; D'Suze G.; Dominguez-Bello M.G.; Lovera M.; Mijares A.J.; Bonoli S.
Lab. of Cellular Neuropharmacology, Centro de Biofisica y Bioquimica, Inst. Venezolano de Invest. Cient., Apartado 21827,Caracas 1020A Venezuela
Toxicon (TOXICON) (United Kingdom) 1993, 31/12 (1581-1594)
CODEN: TOXIA ISSN: 0041-0101
DOCUMENT TYPE: Journal; Article
LANGUAGE: ENGLISH SUMMARY LANGUAGE: ENGLISH

A clinical entity named 'bovine paraplegic syndrome' ('sindrome paraplejico de los bovinos') has spread alarmingly in the cattle-growing areas of the central and eastern plains of Venezuela. It is estimated that four million cattle are bred in the area where the disease occurs. The mortality ranges from 5 to 25% of the animals at risk, mostly pregnant or lactating cows. The principal characteristic of the bovine paraplegic syndrome is ventral or sternal **decubitus** , in animals that make vain efforts to stand when stimulated. The diagnosis is established when all other possible causes (e.g. paralytic rabies, **botulism** and blood parasites such as Anaplasma marginal, Babesia bovis, B. bigemina, and Trypanosoma vivax) have been ruled out clinically and by laboratory tests. Death always occurs, usually after a few days, and there is no known treatment. In this work, we describe results that show the presence of a toxin in the cattle suffering from, or liable to suffer from the syndrome. The toxin is produced by ruminal bacteria. In squid giant axons under voltage clamp conditions, the toxin blocks the sodium current. We detected the toxin analytically by absorbance measurements at 340 nm after reacting with picrylsulfonic acid. We obtained a good separation of the toxin with isocratic high pressure liquid chromatography, using 40% methanol in water on phenylborasil columns.

DRUG DESCRIPTORS:
*toxin--drug toxicity--to
MEDICAL DESCRIPTORS:
*paraplegia
animal experiment; animal tissue; article; controlled study; cow; ld 50; mouse; nonhuman; priority journal; sodium current; squid; voltage clamp
SECTION HEADINGS:
008 Neurology and Nerosurgery
052 Toxicology

16/9/11 (Item 8 from file: 73)
DIALOG(R)File 73:EMBASE

05488307 EMBASE No: 1993256406

Spinal cord injury: An overview

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Urologic Clinics of North America (UROL. CLIN. NORTH AM.) (United States) 1993, 20/3 (373-382)
CODEN: UCNAD ISSN: 0094-0143
DOCUMENT TYPE: Journal; Review
LANGUAGE: ENGLISH SUMMARY LANGUAGE: ENGLISH

Advancements in the management of urologic complications such as the neurogenic bladder have been essential to improving the quality of life and longevity of patients with spinal cord injury. These advances are discussed in greater detail in the subsequent articles in this issue. Despite the many improvements that have been made in post-trauma care, spinal cord injury remains a devastating lesion of the nervous system. Current therapies have not proved to be particularly effective in preventing or reversing damage to the spinal cord. Still, every effort should be made to preserve remaining function and to prevent complications. The care of these patients has been significantly improved with the development of specialized multidisciplinary centers. The emphasis in current treatment focuses on rehabilitation and adaptation to the disability and on prevention of secondary disabilities. Research in basic and clinical neuroscience will result in better, more useful care and treatment for those with spinal cord injury. However, even then, a neurorehabilitation team will be essential to care for these patients. Continuing efforts must be made to ensure that people with spinal cord injury lead full and productive lives.

DRUG DESCRIPTORS:
botulinum toxin--drug therapy--dt; **botulinum** toxin--drug administration --ad; clonazepam--drug dose--do; clonazepam--drug therapy--dt; clonazepam --drug administration--ad; clonidine--drug therapy--dt; clonidine--drug dose--do; clonidine--drug administration--ad; dantrolene--drug administration--ad; dantrolene--drug dose--do; dantrolene--drug therapy--dt ; diazepam--drug administration--ad; diazepam--drug therapy--dt; diazepam --drug dose--do
MEDICAL DESCRIPTORS:
*spinal cord injury--epidemiology--ep
brown sequard syndrome--complication--co; cauda equina; **decubitus** --complication--co; deep vein thrombosis--complication--co; feces impaction --complication--co; human; intramuscular drug administration; neurogenic bladder--complication--co; oral drug administration; priority journal; quadriplegia--complication--co; review; spasticity--drug therapy--dt; spasticity--complication--co; syringomyelia--complication--co; transdermal drug administration
CAS REGISTRY NO.: 1622-61-3 (clonazepam); 4205-90-7, 4205-91-8, 57066-25-8 (clonidine); 14663-23-1, 7261-97-4 (dantrolene); 439-14-5 (diazepam)
SECTION HEADINGS:
008 Neurology and Nerosurgery
028 Urology and Nephrology
033 Orthopedic Surgery
037 Drug Literature Index

16/9/12 (Item 1 from file: 149)
DIALOG(R)File 149:TGG Health&Wellness DB(SM)

02405036 SUPPLIER NUMBER: 118599526 (THIS IS THE FULL TEXT)

Urinary incontinence: is there effective therapy?

Eslami, Michelle S.; Friedman, Jodi L.

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ABSTRACT: Urinary incontinence is a widespread disorder that remains underdiagnosed, underreported, and undertreated. Nevertheless, it is highly treatable. Components of the initial office evaluation include a focused history taking, physical examination, a postvoid residual urine volume measurement, and urinalysis. Behavioral interventions are first-line therapy. These include bladder training, pelvic floor muscle training, biofeedback therapy, and caregiver-dependent interventions. The antispasmodics oxybutynin and tolterodine ore the most commonly used agents for urge incontinence. Stress incontinence can be treated with pseudoephedrine or topical vaginal estrogen. Imipramine may be helpful in cases of nocturnal or mixed incontinence. Overflow incontinence caused by an anatomic obstruction may be treated with an (alpha)-blocker.

Urinary incontinence affects more than 17 million Americans; it is most common in women and in elderly persons. (1) Although the prevalence of most forms of incontinence increases with age, incontinence is considered abnormal, regardless of age.

Urinary incontinence affects 10% to 30% of women between 30 and 60 years of age; the prevalence in women older than 60 years ranges from 15% to 43%. (2) The prevalence in men at all ages ranges from 1.6% to 24%. (2) Urinary incontinence affects more than 50% of patients in nursing homes and has been associated with dementia, fecal incontinence, and the inability to walk and transfer independently. (3)

In spite of the prevalence of urinary incontinence, this condition remains underdiagnosed, underreported, and undertreated. Only 32% of primary care physicians routinely ask all of their patients about incontinence, and 50% to 75% of incontinent community-dwelling patients never describe their symptoms to physicians. (4) This is regrettable, because incontinence is highly treatable.

In this article, we review what to include in the evaluation to help you arrive at a working diagnosis, and we describe nonpharmacologic and pharmacologic management strategies for each type of urinary incontinence.

OVERVIEW

Urinary incontinence may be transient or persistent.

Risk factors for persistent incontinence include impaired functional and mobility status, impaired cognition, multiparity, vaginal delivery, estrogen depletion, hysterectomy, obesity (body mass index greater than 30 kg/(m.sup.2)), stroke, Parkinson disease, diabetes, benign prostatic hypertrophy, and the use of certain medications (Table 1). (3)

Transient causes--such as delirium, infection, and urethritis--are reversible with treatment (Table 2). (5) Transient incontinence affects one third of community-dwelling and half of hospitalized elderly persons. (6) If a patient continues to have incontinence after transient causes have been ruled out, he or she may have persistent incontinence.

PATHOPHYSIOLOGY

Most of the detrusor muscle is innervated by the cholinergic nervous system via the sacral plexus ($2 through $4), which, when stimulated, causes the bladder to contract and empty. (7) The bladder outlet has 2 components. The internal urethral sphincter is innervated by the (alpha)-adrenergic nervous system via the hypogastric plexus (T11 through L2), which, when stimulated, contracts the internal urethral sphincter to allow storage of urine. The distal component--the external urethral sphincter--is innervated by the somatic nervous system via the pudendal nerve, which also innervates pelvic floor muscles and is under voluntary control.

Urine is stored when the detrusor muscle relaxes and the sphincters close. The normal bladder stores between 300 and 600 mL of urine; the first urge to void occurs between 150 and 300 mL. Emptying of the bladder occurs with detrusor contraction and the opening of the sphincters as true detrusor pressure increases and exceeds urethral resistance.

Estrogen also affects continence via receptors in the urethra and pelvic floor musculature. Estrogen deficiency can reduce the effectiveness of the sphincters and pelvic muscles and may exacerbate stress

incontinence. Estrogen deficiency may also predispose women to urethritis, trigonitis/cystitis, and atrophic vaginitis, all of which may exacerbate urge incontinence. (8)

Changes that accompany aging may also affect continence. These include a decrease in bladder capacity, contractility, and the ability to postpone voiding; a reduction in urethral length and sphincter strength in women; and increased prostate size in men.

TYPES OF INCONTINENCE

Persistent incontinence includes urge, stress, overflow, mixed, and functional incontinence.

Urge incontinence--also known as detrusor instability (a urodynamic diagnosis), detrusor hyperreflexia, overactive bladder, and irritable bladder--is the most common cause of persistent incontinence, especially in persons older than 75 years. Patients complain of loss of urine, preceded by a strong urge to void, and frequency both during the day and at night. This form is usually idiopathic; however, it may also be caused by bacterial cystitis, bladder tumor, bladder stones, atrophic vaginitis, urethritis, stroke, Parkinson disease, and dementia. (3)

Stress incontinence is the second most common type of incontinence in elderly persons. In 85% of cases, urinary leakage results from increased abdominal pressure (stress) that causes the bladder neck and urethra to drop below the pelvic floor. This effect may be related to aging, hormonal changes, multiparity, hysterectomy, or pelvic surgery. In the remaining 15% of cases, incontinence is attributable to intrinsic sphincter deficiency, which results in incomplete closure of the internal sphincter and subsequent leakage. This disorder can be secondary to pelvic or incontinence surgery, pelvic radiation, trauma, or neurogenic disorders. (9)

Overflow incontinence may be related to overdistention of the bladder, which results in constant or frequent dribbling. Causes include bladder outlet obstruction as a result of benign prostatic hypertrophy, a stricture, a cystocele, or fecal impaction. Another type of overflow incontinence is acontractile bladder (also known as detrusor hypoactivity or atonic bladder), which can result from diabetes, multiple sclerosis, lower spinal cord damage, and/or medications. (3)

Mixed incontinence is a combination of any 2 or more of the above causes of persistent incontinence. The most common combination is urge and stress; typically, 1 type predominates.

Functional incontinence does not involve the lower urinary tract and is usually the result of physical and/or cognitive impairment (eg, from arthritis or stroke) that prevents the patient from getting to the toilet. (5)

DIAONOSIS

The evaluation of urinary incontinence in the office setting includes a focused history taking and physical examination, a postvoid residual (PVR) urine volume measurement, and urinalysis. These components usually suffice to provide a working diagnosis on which to base initial therapy.

A useful screening question to help identify patients with incontinence is, "In the past year, have you ever lost urine?" If the answer is yes, ask, "Have you lost urine on at least 6 different days?" Once a diagnosis of incontinence has been established, inquire about the onset and duration of symptoms, previous treatment, comorbid conditions, and medications. Obtain a genitourinary history (eg, previous incontinence surgery or prostate surgery). Determine whether the incontinence is transient or persistent and how it affects the patient's quality of life. Explore the patient's desire for treatment.

A bladder record is often a useful adjunct to the history. It logs the frequency, timing, and the number of continent and incontinent episodes over a 1- or 2-day period. (3) It can be completed by the patient and reviewed at a subsequent office visit.

Physical examination. Assess the patient's mental status and mobility and determine whether there are signs of peripheral edema or congestive heart failure. Include a neurologic evaluation, with specific attention to the lumbosacral nerves and possible signs of peripheral neuropathy. (3) A pelvic examination helps assess paravaginal muscle tone and the presence of atrophic vaginitis, cystocele, rectocele, tenderness, and mass. (3,9) The focus of a rectal examination is to assess sphincter tone (active and

resting tone, which helps determine the integrity of the sacral plexus), and check for fecal impaction, the presence of a mass and, in a male patient, prostate consistency and syrmnetry. (3)

Diagnostic testing. A cough stress test is performed by having the patient cough forcefully in the standing position before voiding. Immediate leakage of urine is diagnostic for stress urinary incontinence with specificity greater than 90%. (3) Within 5 minutes after the patient has voided, obtain a PVR value by catheterization or bladder ultrasonography. A PVR value of less than 50 mL (less than 100 mL in elderly persons) suggests adequate bladder emptying. A PVR value of more than 200 mL suggests detrusor weakness or obstruction; evaluation by a urologist is recommended in such cases. (3,5)

Laboratory evaluations include measurement of calcium and glucose levels if polyuria is present and a blood urea nitrogen/creatinine test if the PVR value is more than 200 mL. (3) An initial urinalysis is done to assess for heine, glucose, and leukocytes. Order a urine culture if infection is suspected; a urinary tract infection can cause urge incontinence. (10) Simple cystometrics are useful if symptoms are ambiguous; testing can be done in the office. (11) Cystometric testing determines bladder capacity and stability and has a 70% to 91% positive predictive value for urge incontinence. (11) If the diagnosis remains unclear, refer the patient to a specialist for formal multichannel urodynamic testing.

BEHAVIORAL INTERVENTIONS

Patient-dependent behavioral interventions are always the first line of therapy; they have been shown to be as effective as pharmacologic therapies. (12) Simple recommendations include the following:

* Reduce the amount of fluid intake after 7 PM.
* Avoid bladder stimulants, such as caffeine.
* Use diuretics judiciously and do not take before bedtime.
* Elevate legs when sitting to relieve diuresis before bedtime (for patients with lower extremity edema).
* Have easy access to a toilet (eg, a bedside commode, if necessary).

Bladder training or retraining. This method works equally well with urge or stress incontinence. It involves educating patients about the physiology of their type of incontinence and having them attempt a scheduled voidhag trial, with an initial delay of 15 minutes. This intervention has a reported 20% dry rate, and 75% of patients experience at least a 50% reduction in the number of incontinent episodes. (3)

Pelvic floor muscle training (Kegel exercises) involves "drawing in" or "lifting up" the perivaginal (levator ani) muscles and anal sphincter for a 10-second contraction followed by a 10-second relaxation. Providing the patient with both written and verbal instructions increases the success rate of the intervention. The exercises should be performed 30 to 80 times a day for at least 6 weeks. An improvement rate of up to 95% has been reported. (3,13)

Biofeedback therapy is done with a single measurement (vaginal or anal probe) using electromyelographic or manometric methods with simultaneous measurement of pelvic, abdominal, and detrusor muscle activity. With the guidance of a physical therapist, the patient learns how to isolate and strengthen the pelvic floor muscles. This modality is associated with a 54% to 87% improvement rate and is useful in managing urge, stress, and mixed incontinence. (3,12)

Caregiver-dependent interventions for urge and functional incontinence include scheduled toileting on a fixed schedule at regular intervals every 2 to 4 hours, day and night. In uncontrolled studies, the rate of improvement is 29% to 85%. (3) Habit training is a toileting schedule that matches the patient's voiding habits; the improvement rate is 86%. (3) Prompted voiding involves monitoring the patient, encouraging him to use the toilet, and praising him for maintaining continence. This technique is most useful in the nursing home setting and reduces incontinent episodes by an average of 1 or 2 per day. (3)

PHARMACOLOGIC AND SURGICAL MANAGEMENT

Although most patients experience relief of symptoms with behavioral therapies, many will likely require the addition of pharmacologic agents for optimal control.

Urge incontinence. A number of approved pharmacologic therapies are

available for urge incontinence (Table 3). However, caution is advised in prescribing these agents for patients who have a pretreatment PVR volume of more than 100 mL because of the risk of urinary retention.

The antispasmodics oxybutynin and tolterodine are the most commonly used agents; they inhibit the effects of acetylcholine on the detrusor muscle. Oxybutynin is available in immediate-release, extended-release, and transdermal formulations. Tolterodine is available in immediate-release and extended-release formulations. Both immediate-release preparations reduce incontinence by about 45% to 50%. (14,15) Extended-release tolterodine reduces incontinence by 71%; extended-release oxybutynin, by 83%. (16)

In a double-blind study that compared extended-release preparations of oxybutynin and tolterodine in women, the agents were equally effective in reducing weekly urge incontinence and total incontinence episodes. However, the percentage of women who reported no urinary incontinence episodes was significantly higher in the oxybutynin group than in the tolterodine group (23% vs 16%; P = .03). (16)

Anticholinergic side effects, especially dry mouth, are more common with oxybutynin. A meta-analysis comparing the 2 agents found that tolterodine caused less dry mouth than oxybutynin. (17) The transdermal preparation of oxybutynin appears to cause less dry mouth than either immediate-release or extended-release formulations. In a double-blind trial, the transdermal formulation was associated with fewer anticholinergic side effects than extended-release tolterodine. (18)

Other agents are used for urge incontinence, but they have not shown consistent efficacy in randomized controlled trials. Propantheline reduces incontinence by up to 53% but is not well tolerated in older patients. (3) Hyoscyamine is rapid and short-acting and can be taken sublingually. Dicyclomine is thought to improve incontinence, but there are few studies of its effectiveness. (3) It is not well tolerated in older patients, and treatment of urinary incontinence is an unlabeled use. Flavoxate has no benefits. (3)

Newer treatments. These include vanilloids, **botulinum** toxin, and the sacral nerve stimulation system for urinary control (InterStim). The vanilloids capsaicin and resiniferatoxin can be instilled directly into the bladder; they selectively inhibit reflex bladder contractions. These agents are considered experimental; they may be effective for urge incontinence resulting from spinal cord lesions, multiple sclerosis, or Parkinson disease. (19)

Botulinum toxin can be injected directly into the urethral and bladder skeletal and smooth muscle, which results in reversible chemical denervation. It can be used to treat detrusorsphincter dyssynergia and detrusor hyperreflexia attributable to spinal cord injury. Clinical trials are currently under way to test its effectiveness in patients with recalcitrant overactive bladders. The effects of **botulinum** toxin are seen within 5 to 7 days and can last up to 3 to 6 months. (19)

The InterStim system can be likened to a pacemaker for the bladder. It involves the surgical placement of a lead into the S3 nerve root that is attached to a neurostimulator implanted under the skin on the back and controlled by a handheld programmer that can be adjusted to increase or decrease bladder contractions. This device may be effective in the management of intractable symptoms of urge incontinence, urgency-frequency, or nonobstructive urinary retention. (20)

Stress incontinence. There are no FDA-approved drugs for stress or overflow incontinence. The (alpha)-adrenergic agonist pseudoephedrine has been shown to reduce incontinence by 20% to 60%. (4,21) However, most of the studies that demonstrated this effect used phenylpropanolamine, which is no longer available.

Oral estrogen cannot be recommended as a first-line treatment for stress and/or urge incontinence. Clinical trial data from the Women's Health Initiative and secondary data analysis from the Heart and Estrogen/Progestin Replacement Study showed a worsening of incontinence (urge, stress, or mixed) in the women who took estrogen plus medroxyprogesterone acetate. (22,23) However, a systematic review of randomized trials found that unopposed estrogen therapy is effective in treating incontinence: approximately 50% of women treated with estrogen were cured or showed improvement, compared with 25% of patients who received placebo. (24)

A trial with local vaginal estrogen may be undertaken to improve stress incontinence and urgency symptoms; however, definitive data on its effectiveness are lacking. Topical forms of estrogen include vaginal cream and an impregnated estrogen ring that is changed every 3 months.

The tricyclic antidepressant imipramine has dual (alpha)-agonist and anticholinergic activity and can be useful for nocturnal incontinence and mixed incontinence. (3) Duloxetine, a selective serotonin/norepinephrine reuptake inhibitor in phase 3 trials, increases pudendal nerve activity and appears to have a strengthening effect on the external urethral sphincter. (25)

For stress incontinence resulting from urethral hypermobility, surgical techniques include open retropubic suspension (Marshall-Marchetti-Krantz procedure or Burch colposuspension) and bladder neck needle suspension. For intrinsic sphincter deficiency, the Sling procedure is recommended. Surgery can cure incontinence in 4 of 5 cases, but the long-term success rate drops to 50% after 10 years. (9)

Overflow incontinence caused by an anatomic obstruction (eg, an enlarged prostate) can be treated with an a-blocker, such as doxazosin, terazosin, tamsulosin, or afluzosin, or surgically. (3,26) For overflow incontinence resulting from an acontractile detrusor (atonic bladder), intermittent cathetaization is the treatment of choice. Bethanechol is rarely effective, except perhaps for patients with overflow incontinence who must continue to take anticholinergic medications. (27)

OTHER THERAPIES

Pessaries are indicated as a temporary measure for women who are awaiting surgery for pelvic prolapse or as a treatment for women who are unable, for medical reasons, or unwilling to undergo correction of their prolapse. Complications can include erosion or ulceration of vaginal epithelium and/or a rectovaginal and vesicovaginal fistula. (3,28)

Periurethral bulking agents. Polytetrafluoroethylene, collagen, or autologous fat is injected under cystoscopic guidance into an incompetent periurethral area. This procedure may be useful for women with stress incontinence resulting from an incompetent internal sphincter in whom general anesthesia is contraindicated. Data from randomized studies suggest short-term improvement in symptoms. (29) Urinary tract infections and transient urethral irritation are the most common side effects. Other complications include urgency, incontinence, and urinary retention.

Absorbent products (diapers, pads) are a last resort for many patients. An indwelling catheter is indicated only for significant, irreversible urinary retention; skin disorders, such as perineal groin rash or stage III or IV **pressure sores** ; or patient comfort or preference.

WHEN TO REFER

Further evaluation by a urologist or urogynecologist is recommended when:

* Office-based interventions fail.
* The diagnosis is uncertain.
* The patient's incontinence is associated with recurrent symptomatic urinary tract infections, a symptomatic pelvic prolapse, an abnormal PVR volume, and/or hematuria without a coexisting infection.

FOR MORE INFORMATION:

* Holroyd-Leduc JM, Straus SE. Management of urinary incontinence in women. Scientific review. JAMA. 2004;291:986-995.
* Holroyd-Leduc JM, Straus SE. Management of urinary incontinence in women. Clinical applications. JAMA. 2004;291:996-999.

CLINICAL HIGHLIGHTS

* Office evaluation of urinary incontinence includes a focused history taking, physical examination, a postvoid residual (PVR) urine volume measurement, and urinalysis.
* Immediate urine leakage during a cough stress test is more than 90% specific for incontinence. Within 5 minutes after the patient has voided, obtain a PVR volume by catheterization or bladder ultrasonography. A PVR volume of less than 50 mL (less than 100 mL in elderly persons) suggests adequate bladder emptying. A PVR value of more than 200 mL suggests detrusor weakness or obstruction.
* A pelvic examination helps assess paravaginal muscle tone and the presence of atrophic vaginitis, cystocele, rectocele, tenderness, and mass. In a male patient, check for prostate consistency and symmetry.

* Bladder training, a patient-dependent behavioral intervention, involves educating patients about the physiology of their type of incontinence and having them attempt a scheduled voiding trial with an initial delay of 15 minutes. This is effective for both stress and urge incontinence.

* Pelvic floor muscle training is associated with an improvement rate of up to 95% in patients with urinary incontinence. Providing the patient with written and verbal instructions increases the chances of success. Kegel exercises should be performed 30 to 80 times a day for at least 6 weeks.

Table 1--Pharmacologic agents and their effects on continence

Drug	Effect
Sedatives, hypnotics	Sedation, delirium, immobility
Alcohol	Polyuria, frequency, urgency
Anticholinergics, antipsychotics, antidepressants, antihistamines	Urinary retention, overflow incontinence, fecal impaction, delirium
Cholinergics	Urgency, urge incontinence
Narcotic analgesics	Urinary retention, sedation, fecal impaction
(alpha)-Adrenergic antagonists	Urethral relaxation, stress incontinence
(alpha)-Adrenergic agonists	Urinary retention
Calcium channel blockers, especially dihydropyridines	Urinary retention, nocturia
Potent diuretics	Polyuria, frequency, urgency
ACE inhibitors	Drug-induced cough, which may result in stress incontinence

ACE, angiotensin-converting enzyme.

Table 2--Reversible causes urinary incontinence (DIAPPERS)

D--Delirium

I--Infection

A--Atrophic: vaginitis or urethritis

P--Pharmaceuticals: benzodiazepines, alcohol, diuretics, anticholinergic agents, (alpha)-adrenergic agents, calcium channel blockers

P--Psychological disorders

E--Endocrine disorders, excessive urine production

R--Restricted mobility

S--Stool impaction

From Resnick NM. Med Grand Rounds. 1984. (30)

Table 3--Pharmacologic agents for urge and stress urinary incontinence

Drug	Dosage	Mechanism of action

(alpha)-Adrenergic agonists		
Pseudoephedrine	15 - 30 mg tid	Increases urethral smooth muscle contraction (unlabeled use)
Conjugated estrogens		
Topical	0.5 - 1 g/applicator/d for 3 wk, then twice/wk	Increases periurethral blood flow, strengthens periurethral tissues
Estring	7.5 (micro)g/24 h	Increases periurethral blood flow, strengthens periurethral tissues
Anticholinergic/ antispasmodic agents		
Oxybutynin	2.5 - 5 mg tid	Increases bladder capacity
Oxybutynin extended-release	5 - 30 mg/d	Increases bladder capacity
Oxybutynin transdermal patch	3.9 mg/d	Increases bladder capacity
Tolterodine	1 - 2 mg bid	Increases bladder capacity
Tolterodine extended-release	4 mg/d	Increases bladder capacity
Propantheline	15 - 30 mg qid	Increases bladder capacity
Hyoscyamine	0.375 mg bid	Increases bladder capacity
Imipramine	10 - 25 mg qd/qid	Increases bladder capacity and strengthens internal urethral sphincter (unlabeled use)

Drug	Type(s) of incontinence	Potential adverse effects
(alpha)-Adrenergic agonists		
Pseudoephedrine	Stress with sphincter weakness	Headache, tachycardia, blood pressure elevation, urinary retention
Conjugated estrogens		
Topical	Stress/urge associated with atrophic vaginitis	Vaginal bleeding, breast tenderness; risk of cancer
Estring	Stress/urge associated	Vaginal bleeding,

	with atrophic vaginitis	breast tenderness; risk of cancer
Anticholinergic/ antispasmodic agents		
Oxybutynin	Urge with detrusor inability or hyperreflexia	Dry mouth (less with extended-release preparation), blurry vision, elevated intraocular pressure, delirium, constipation, urinary retention
Oxybutynin extended-release	Urge with detrusor inability or hyperreflexia	Dry mouth, headache, urinary retention, delirium, constipation, dry eyes
Oxybutynin transdermal patch	Urge with detrusor inability or hyperreflexia	Dry mouth, headache, urinary retention, delirium, constipation, dry eyes
Tolterodine	Urge with detrusor inability or hyperreflexia	Dry mouth, headache, urinary retention, delirium, constipation, dry eyes
Tolterodine extended-release	Urge with detrusor inability or hyperreflexia	Dry mouth, headache, urinary retention, delirium, constipation, dry eyes
Propantheline	Urge with detrusor inability or hyperreflexia	Dry mouth, headache, urinary retention, delirium, constipation, dry eyes
Hyoscyamine	Urge with detrusor inability or hyperreflexia	Dry mouth, headache, urinary retention, delirium, constipation, dry eyes
Imipramine	Urge and/or stress	Dry mouth, headache, urinary retention, delirium, constipation, dry eyes, postural hypotension, cardiac conduction disturbances

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DESCRIPTORS: Urinary incontinence--Care and treatment; Urinary incontinence --Diagnosis; Urinary incontinence--Analysis
GEOGRAPHIC CODES/NAMES: 1USA United States
FILE SEGMENT: TI File 148

16/9/13 (Item 2 from file: 149)
DIALOG(R)File 149:TGG Health&Wellness DB(SM)

02392174 SUPPLIER NUMBER: 115495514 (THIS IS THE FULL TEXT)
Spasticity & SCI: what is it? What causes it? And which treatments help?
Little, James W.; Sepahpanah, Farhad; Salzman, Cynthia
Paraplegia News, 58, 4, 12(5)
April,
2004
PUBLICATION FORMAT: Magazine/Journal ISSN: 0031-1766 LANGUAGE: English
RECORD TYPE: Fulltext TARGET AUDIENCE: Academic; Professional
WORD COUNT: 2555 LINE COUNT: 00209

TEXT:

The brain is said to be the most complex structure in the universe. If that's true, then the spinal cord is the second most complex one. The brain is made up of millions of neurons or nerve cells and trillions of synaptic connections. It is incredible complexity in a compact structure, the size of your two fists. The spinal cord has millions of neurons and billions of synaptic connections and has a cross-sectional size similar to your little finger.

Spasticity is a common problem after spinal-cord injury (SCI) and results from exaggerated reflex activity that develops below the spinal-cord damage. To understand how this happens, you must understand that circuits make up the brain and spinal cord.

Signals are carried from one neuron down its axon (nerve fiber) to the next neuron by an electrical signal. This signal releases a chemical signal at the nerve ending, called a neurotransmitter, which communicates across to the next nerve cell, excites that cell, and so on down the pathway. The site of chemical transmission between one nerve cell and the next is a synapse.

Neurons that carry messages from the brain down to the spinal cord are called upper motor neurons (UMNs). Lower motor neurons (LMNs) extend from the spinal cord to the muscles of the body. Synapses allow UMNs to activate LMNs, carrying motor information from the brain to the muscles.

Sensation is communication from the body to the brain and begins with sensory nerves in the skin, muscle, joints, and other tissues; they send messages up to the spinal cord and then to the brain about the state of the tissues.

Many different kinds of specialized sensory nerve fibers exist. One type carries information about the velocity of stretch in muscle; it sends a signal to the brain that tells how quickly your muscle is being stretched at any given moment. These stretch receptors begin a stretch reflex that passes through a synapse in the spinal cord to LMNs and then back out to muscle. Hyperactivity in this reflex is one major cause of spasticity.

When a spinal cord is injured, the thousands of reflex circuits are usually spared below the injury. Over weeks to months after SCI, those reflexes become hyperactive, causing spasticity.

We believe one reason this occurs is that reflex inputs from the sensory fibers to the LMNs grow new synapses. Where before a sensory fiber made only a few synaptic contacts with the LMN, now it's making many; it has grown more synapses and now has a stronger reflex connection. So, if

Rehabilitation Medicine, University of Washington. Dr. Sepahpanah is a fellow, SCI medicine, Rehabilitation Medicine, University of Washington. Dr. Little earned his M.D. and Ph.D. (in anatomy) at the University of Chicago, and completed his residency in physical medicine and rehabilitation at the University of Washington. His research interests include recovery of function, neuroplasticity, spasticity, and posttraumatic syringomyelia. Funding sources for Dr. Little's studies have included the Paralyzed Veterans of America (PVA), the American Paraplegia Society (APS), Military Order of Cootie Auxiliary, and the VA Rehabilitation Research & Development Service.

DESCRIPTORS: Spasticity--Analysis; Spinal cord injuries--Influence
GEOGRAPHIC CODES/NAMES: 1USA United States
FILE SEGMENT: HI File 149

16/9/14 (Item 3 from file: 149)
DIALOG(R)File 149:TGG Health&Wellness DB(SM)

02372928 SUPPLIER NUMBER: 117056305 (THIS IS THE FULL TEXT)
Makeover Nation.(plastic surgery)
Shute, Nancy
U.S. News & World Report, 136, 19, 52-56,58,62-63
May 31,
2004
PUBLICATION FORMAT: Magazine/Journal ISSN: 0041-5537 LANGUAGE: English
RECORD TYPE: Fulltext TARGET AUDIENCE: Consumer
WORD COUNT: 2919 LINE COUNT: 00228

TEXT:

When Phyllis Bradshaw's twin sons went off to college, she decided it was time to better herself. She started exercising, ate better, and began writing a novel. Then the Lewisville, Texas, ex-airline reservation agent went in for surgery to remove excess skin from her upper eyelids. She liked the results so much that she decided to have her neck and stomach done, too. "I'm not trying to look gorgeous, 20, Barbie," Bradshaw, 49, says. "I'm just trying to get rid of the things that are hanging." Her husband hated the idea, so she went to the bank and borrowed the $20,000 herself.

Last December, Bradshaw spent two days in the hospital. For the next few weeks she was too stiff to drive a car or turn her head to the side. "I could not believe how painful it was--like sharp lines up and down my stomach." But, she says, the results are "very natural, which is what I like." Her husband is happy, too. "I never thought much about plastic surgery before," Bradshaw says. "But it is amazing how many people are doing it now."

Amazing indeed. Americans are rushing to get tucked, suctioned, tightened, and tweaked like never before. More than 8.7 million people underwent cosmetic surgery in 2003, up 33 percent from the year before, according to the American Society of Plastic Surgeons. No longer a privilege of society wives and aging starlets, cosmetic surgery has gone mainstream, available to almost anyone with a credit card and some vacation time.

Prime-time television enlightens viewers on the mechanics of liposuction and nose jobs, from MTV's I Want a Famous Face--with its pimply-faced lads who have themselves reshaped like Brad Pitt in order to get girls--to Fox's The Swan. In this 21st-century version of the 1950s sob show Queen for a Day, women compete not for a washing machine but for makeovers that include massive amounts of surgery, as well as for the chance to compete in a May 24 beauty pageant. "I wanted to look more like a woman," says Kristy Garza, 22, a contestant from Fort Irwin, Calif., who endured 9.5 hours of surgery that included a nose job, brow-lift, mid-face-lift, breast augmentation, and liposuction. "Now I turn heads. It feels so good."

Ugly ducklings? But for all the joy that plastic surgeons must be feeling about the popularity of their long-maligned craft, many also fear

that shows like The Swan may be making people unrealistic, both about what surgery can accomplish and about the very real dangers of going under the knife. "The public is being lulled into the sense that there are no real risks or complications," says Rod Rohrich, a Dallas surgeon and president of the American Society of Plastic Surgeons. "We're already seeing the impact. I have patients saying they want all these things done in one operation, and you can't safely do it. It's not like buying groceries or shoes. You can take those back. You can't take your face back."

Indeed, as the number of people pursuing perfection has increased, so has the number of people injured or killed. On May 14, the state of New York fined Manhattan Eye, Ear, and Throat Hospital $20,000 for "egregious violations" in safety procedures that led to the death of two women following plastic surgery, including Olivia Goldsmith, 54, author ofThe First Wives' Club. In Florida, the deaths of eight patients in the past 18 months prompted officials to impose a three-month ban on combined tummy tucks and liposuction. The federal Centers for Disease Control and Prevention is now investigating 11 cases of rare, life-threatening infections after people traveled to the Dominican Republic for cut-rate cosmetic surgery. Rohrich says that half his patients are coming in to have body parts fixed, following botched surgery by someone else.

The notion that people can defy time and heredity, reshaping their bodies to suit their will, is hardly new. By the 16th century, surgeons were reshaping noses to disguise the telltale signs of syphilis. In the 1880s, surgeons lengthened Irish immigrants'"pug" noses to help them assimilate. After World War II, plastic surgeons who had honed their skills on the injured returned to help not only patients disfigured by accidents and disease but also those seeking face-lifts. Still, for most Americans, self-improvement remained a largely spiritual pursuit. In the past few decades, improved surgical techniques and new social attitudes have changed all that.

Society now puts more emphasis on looking good longer. "The system tells women they are more highly valued if they are young and thin," says Rebecca Ancheta, a San Francisco sociologist who has studied women's experiences with face-lifts. Indeed, baby boomers don't want to look the way their mothers did at 50. Nowadays, people get divorced and find themselves dating at 40, 50, 60.

People change jobs more often, too, and the competition can be 20 years younger. Even workplace demands have changed. "If you work on the assembly line at General Motors, no one cares how you look," says Lynne Luciano, an assistant professor of history at California State University and author of Looking Good: Male Body Image in Modern America. Now the job's more likely to be in the sales department. And nobody wants to buy from a jowly guy in a size XXL T-shirt.

Yet not all people seeking cosmetic surgery are boomers desperate to reclaim lost youth. Last year, 24 percent of those getting plastic surgery were under 35. Most of those simply have a body part they'd like to change. Linda Parker had always wanted to do something about her nose. "I felt it was too big for my face, growing up. It was a honker. It had to go." Finally, at age 38, she decided to have rhinoplasty surgery, otherwise known as a "nose job." She is African-American, and worried friends asked her if she would no longer look black."That is not the case. It's not like I have a Caucasian nose. It's just a good nose for my face." Indeed, where in years past minorities may have sought cosmetic surgery to appear more white or European, surgeons say they are now doing it for the same reasons as everyone else: to look good. "It's not taboo," says Parker, an office manager in Dallas. "I even went to a popular restaurant with my little drip pad under my nose, and I didn't turn a head."

Beyond Texas. Texas leads the nation in embracing cosmetic surgery, along with New York and Florida. But even in more conservative areas like the Midwest, face-lifts and tummy tucks are becoming acceptable. "It's culturally driven," says Laurie Casas, a plastic surgeon in Glenview, Ill. "In the last five or 10 years, people have had friends or relatives who have had plastic surgery, and they have seen the positive improvements in how they feel about themselves."

Medicine has changed, too. Fifty years ago, a surgeon who performed cosmetic procedures was derided by his peers as a "beauty doc." Now eye doctors, gynecologists, ear-nose-and-throat docs, even dentists are

clamoring to do **Botox** and breast augmentations. The reason is simple: money. Last year consumers paid $9.4 billion for cosmetic procedures, equal to about one third of the budget of the National Institutes of Health. Cosmetic surgery is one of the few medical specialties where practitioners get paid in cash up front. With insurers cutting physician payments across the board, injecting **Botox** at $400 a pop sounds all too alluring. Even august teaching hospitals like Johns Hopkins University Hospital are pushing cosmetic surgery as a way to subsidize money losers such as post-mastectomy breast reconstruction.

"Getting work done" is also becoming more attractive because procedures are becoming less invasive. The 2002 introduction of **Botox** , an injected form of **botulism** toxin that reduces wrinkles by temporarily paralyzing facial muscles, made it possible for people averse to surgery to try cosmetic medicine. Injectable fillers that plump out wrinkles are also increasingly popular and include old standards such as collagen and new products like hyaluronic acid (Restylane and Hylaform), a laboratory-made version of a chemical in human connective tissue. Surgeons are increasingly using a person's own fat, extracted from the abdomen or buttocks, to plump lines and recontour faces. All these fillers are temporary, lasting for a year at best. Permanent fillers that include tiny acrylic beads are being used in other countries but are a dicier proposition, since the substances can migrate, and any lumps or bumps that develop would have to be removed surgically. "People who use permanent fillers need to go in with their eyes open," says Leroy Young, a plastic surgeon in St. Louis, who notes that doctors injected liquid silicone for years before problems developed. "Permanent fillers can mean permanent problems."

Cosmetic surgeons also are adapting the minimally invasive surgical techniques used for gall bladder removal and heart valve replacements. The goal is to reduce swelling and scarring and to speed recovery. Endoscopic brow-lifts are being used to smooth the forehead through small incisions in the scalp. Surgeons overseas are already performing "feather lifts": In a traditional face-lift, the surgeon cuts loose muscle and skin and reattaches them with multiple stitches. The experimental technique threads barbed sutures under the skin through small incisions, to catch and lift sagging musculature. Surgeons using the technique say recovery takes days, as opposed to weeks with a traditional face-lift. "It's very exciting," says Peter Fodor, a Los Angeles surgeon and president of the American Society for Aesthetic Plastic Surgery. But as with all new procedures, it's unclear whether it will live up to its promise. Several years ago cosmetic surgeons were excited about Thermage, a system that uses radio frequency to tighten facial skin. But that excitement has been followed by disappointment, with only about 20 percent of patients showing big improvement.

Risks of surgery. For major transformations, surgery remains the answer. And any way you slice it, cosmetic surgery is still surgery, with all the risks that entails. Consider liposuction. This popular procedure sounds deceptively simple: Vacuum that bulge, and voila! But liposuction is also the most dangerous cosmetic procedure out there. Complications include clots that travel to the lungs, organ puncture, and infection, all of which can be fatal. No national tally of liposuction complications exists, but data gathered in the 1990s put the death rate as high as 20 per 100,000. By comparison, deaths from hernia or gall bladder removal average 2 per 100,000. In recent years surgeons have tried to reduce risk by limiting the amount of fat removed and other measures. A 2001 survey of surgeons found that the death rate from liposuction alone was about 2 per 100,000 procedures. But that rate soars when multiple procedures are performed. Combining liposuction with abdominoplasty (a tummy tuck) increased the risk 14-fold. "The longer the procedure, the more likely you are to have a pulmonary embolism," says Hector Vila, a Florida anesthesiologist who has studied cosmetic surgery safety.

Mona Alley learned those dangers the hard way. She had seen ads on TV for the Florida Center for Plastic Surgery, based in Fort Lauderdale, which promotes "fly in" specials. The Hollywood, Fla., woman was hoping that liposuction could eliminate her belly fat and perhaps reduce health problems associated with her Type II diabetes. When Alley, then 47, talked with surgeon John Pinnella about liposuction in November 2000, she says, "he assured me it was 100 percent fantastic for diabetes." She says the

doctor also told her there would be no down time. "I was planning to be back bowling the next week." She paid $2,700 for the operation.

Alley wasn't too surprised when her stomach hurt so badly the next day that she wasn't able to go in for a postoperative checkup. But she says that two weeks later, she was so ill she couldn't walk or eat. Alley was hospitalized with a massive infection caused by a perforated intestine. She suffered blood clots, required a colostomy, and had **pressure sores** so big she needed skin grafts. After nine months of repeated infections and hospitalizations, both of Alley's legs were amputated above the knee. She is at home, in a wheelchair. "Look at me," she says now. "It's not all this glamour they put on TV." She is suing the physician and clinic; in court papers, the doctor denies that he was negligent in any way.

Although no surgery is without risk, patients can minimize it by doing their homework. For one thing, any physician can legally perform cosmetic procedures. "In our area there is actually a cardiologist who injects **Botox** ," says Leroy Young. "That's where he thinks the money is."

Ask questions. The picture is further clouded by this country's diffuse regulation of medicine. The federal Food and Drug Administration oversees the safety of devices such as silicone implants. States regulate the practice of medicine. Most people are clueless about this, with three quarters of respondents in a new Harris Poll saying they thought the American Medical Association or the surgeon general regulated cosmetic surgeons. They don't. Instead, consumers need to check a physician's record with the state board of medicine and should also check with the American Board of Medical Specialties (abms.org) to make sure their doctor is board certified in his or her specialty. Few people do. "Nobody's ever asked me in 30 years if I'm board certified," says Robert Bernard, a plastic surgeon in White Plains, N.Y. "Patients should ask: Are you board certified? Where are you going to do the surgery, doc? Is your facility certified? Do you have privileges in a hospital?"

Indeed, it matters not just who's doing the surgery, but where it's taking place. More than half of all operations in the United States are now performed outside of hospitals, either at free-standing surgerycenters or in doctors' offices, because the procedures are cheaper there, and physicians often profit. But nonhospital surgery is ill-regulated, with only 22 states providing oversight. A study in last September's Archives of Surgery found that death and injury is 10 times more likely in office surgery, compared with free-standing surgery centers. Julie Rubenzer, 38, stopped breathing during breast augmentation surgery performed by Sarasota, Fla., physician Kurt Dangl in his office last September. She went into cardiac arrest and later died. State records indicate that Dangl administered anesthesia himself and that he waited five minutes after she stopped breathing before starting chest compressions. The state has placed an emergency restriction on his license.

Injuries are more likely to happen in unaccredited facilities with no qualified anesthesia provider, according to Vila. A study in this month's Plastic and Reconstructive Surgery found that if an office facility is accredited, the risk of death is no greater than that in surgery centers or hospitals. People considering surgery should make sure that the facility is accredited by the American Association for Accreditation of Ambulatory Surgery Facilities, the Accreditation Association for Ambulatory Health Care, or the Joint Commission on Accreditation of Healthcare Organizations. (See plasticsurgery.org, surgery.org, or yestheyrefake.net for advice.)

Jeff Harris, a 38-year-old lawyer from Dallas, had liposuction, eyelid surgery, and fat injections to smooth out his laugh lines last year. "It was alarmingly easy," he says. "It wasn't nearly as painful as I thought." Harris carefully chose a board-certified surgeon and paid for an overnight stay in the hospital because he felt it provided an extra margin of safety. "There are no blue-light specials in cosmetic surgery."

Anesthesia always poses some danger, no matter what the setting. Even the finest facilities can run into trouble. Manhattan Eye, Ear, and Throat Hospital is considered one of the best in the nation, yet the state found 10 safety violations related to the two deaths there. People with health problems such as diabetes or high blood pressure are more at risk, and even seemingly innocuous things like taking herbal supplements can cause unexpected complications. "The name of this game is vigilance," says Roger Litwiller, president of the American Society of Anesthesiologists. "If

someone says he's going to have his office nurse do this, run. You only get one life."

Although this tally of perils may be more than someone eager to eliminate love handles wants to confront, the risks won't evaporate, as long as Americans'romance with surgical enhancement continues unabated. "Beauty shouldn't matter in the world, but it does," says Jeff Harris. Cosmetic surgery, he says, "is a metaphor for change."

DESCRIPTORS: Surgery, Plastic--Statistics; Surgery, Plastic--Social aspects ; Surgery, Plastic--Forecasts and trends
GEOGRAPHIC CODES/NAMES: 1USA United States
SIC CODES: 8000 HEALTH SERVICES
EVENT CODES/NAMES: 010 Forecasts, trends, outlooks;680 Labor Distribution by Employer;290 Public affairs
PRODUCT/INDUSTRY NAMES: 8000418 (Cosmetic Surgery)
NAICS CODES: 62 Health Care and Social Assistance
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16/9/15 (Item 4 from file: 149)
DIALOG(R)File 149:TGG Health&Wellness DB(SM)

02280585 SUPPLIER NUMBER: 110024680 (THIS IS THE FULL TEXT)
Nursing care of patients with late-stage Parkinson's disease.
Calne, Susan M.; Kumar, Ajit
Journal of Neuroscience Nursing, 35, 5, 242(10)
Oct,
2003
PUBLICATION FORMAT: Magazine/Journal; Refereed ISSN: 0888-0395
LANGUAGE: English RECORD TYPE: Fulltext TARGET AUDIENCE: Professional
WORD COUNT: 7829 LINE COUNT: 00768

TEXT:

Abstract: Patients in the late stages of Parkinson's disease may be significantly disabled for many years, often because of their increasing inability to tolerate therapeutic doses of antiparkinson drugs. Their status and management have been overlooked in the literature. Few current healthcare professionals have cared for patients with Parkinson's disease in the prelevodopa era and do not understand how severe awl protracted the illness can be without effective treatment. This article describes a practical approach to the nursing management of severely affected patients (i.e., Hoehn and Yahr Stage 4-5) who no longer derive consistent, therapeutic benefit from their drugs. Specific problems these patients face are adverse drug reactions such as postural hypotension, psychosis, and confusion, as well as difficulties with nutrition, elimination, mobility and falling, communication, sexuality, memory, and mood. Nursing interventions can help minimize the effect of these problems on the patient.

Parkinson's disease (PD) is a common, progressive, neurological disorder with far-reaching medical and psychosocial implications. The incidence of PD is rising at a rate faster than can be explained by the aging population (Lilienfeld & Perl, 1994). A detailed description of PD and its treatment is beyond the scope of this article; see Lang and Lozano (1998a, 1998b) and Noble (2000) for reviews.

Briefly, PD results from damage to pigmented neurons in the substantia nigra ha the midbrain, leading to a reduction in the levels of the neurotransmitter dopamine. The cause, or causes, of this are unknown, but genetic mad environmental factors may be implicated (Calne, 2000). Damage to these neurons eventually results ha emergence of the cardinal signs and symptoms of PD (Table 1).

Neuronal loss in the substantia nigra is faster initially and then follows a curvilinear time course, eventually slowing to that of normal age-related attrition. Further deterioration continues as a result of normal age-dependent dopaminergic cell loss. Slowing of PD progression occurs at a stage when considerable damage has already occurred (Lee et

al., 1994; Schulzer, Lee, Mak, Vingerhoets, & Calne, 1994). Thus, the late stages of PD may be protracted, unlike those in other neurodegenerative disorders such as amyotrophic lateral sclerosis, Alzhehner's disease, and Huntington's disease (Hille et al., 1999; McDonnell et al., 2001).

In the early to middle stages of PD, symptoms can be well controlled with a variety of medications and surgical procedures (Table 2). These patients, especially those with good access to medical care, may continue to lead independent and productive lives, because only these patients can make the return visits to their physicians that are so necessary for optimum management. Independent PD patients with well-controlled symptoms represent the tip of an iceberg. The majority of people with PD have advanced, disabling illness, are unable to tolerate therapeutic doses of antiparkinson medication, and are hidden from society. Patients with late-stage PD have limited access to medical care outside the home or facility where they reside, and their care has not been comprehensively addressed. In this paper, late-stage PD is defined as patients meeting the criteria for stages 4 and 5 of the modified Hoehn and Yahr Scale (Hoehn & Yahr, 1967; Table 3). The mobility of these patients may fluctuate, depending on drug efficacy and tolerance. Thus, the staging may be fluid rather than fixed. For example, patients at Stage 4 may improve on occasion to Stage 3 or worsen to Stage 5.

This article identifies and describes common problems associated with late-stage PD and provides suggestions for appropriate nursing intervention. Some problems such as dementia, impaired communication, and postural instability are not easily amenable to any corrective intervention, but knowledge and understanding of them are still essential for good care. A hill discussion of psychosocial and caregiver issues is beyond the scope of this paper. Recent, peer-reviewed literature is presented together with suggestions for further reading, where appropriate.

General Principles of Management

Medical and surgical treatments for PD are summarized in Table 2. Few PD patients at Stage 4 or Stage 5 Hoehn and Yahr (Table 3) are candidates for stereotactic surgical procedures (e.g., thalamotomy, pallidotomy, deep-brain stimulation), because numerous studies have shown that the outcome in older, more severely affected patients is poor (Lozano, 2003; Welter et al., 2002). However, nurses may care for patients who have had such surgery since its revival in the mid-1990s; see Lozano (2003) for a full review of surgery for PD.

The majority of drugs used to treat PD replace or mimic dopamine in the brain. Contrary to what patients may feel antiparkinson drugs don't stop working, nor do patients become "immune" to them. However, their efficacy can appear to decline as symptoms progress. This is often because the doses of antiparkinson drugs needed to improve symptoms precipitate psychiatric disturbances, leaving patients unable to tolerate therapeutic doses (Calne & Cable, 1997). Nevertheless, without adequate drug intake, mobility and quality of life are reduced, and the risk for falls, aspiration pneumonia, urinary tract infections, and death increases. Even in the face of severe PD with cognitive or psychiatric changes, sufficient antiparkinson drug intake is essential for maintaining at least the integrity of the swallowing reflex (Fuh et al., 1997). In late-stage PD, drugs such as anticholinergics, amantadine, and dopamine agonists may have to be withdrawn completely due to psychiatric side effects. Patients may tolerate only small doses of levodopa. PD patients with dysphagia need crushed standard levodopa (Calne & Calne, 1997). Liquid levodopa is an option if swallowing a crushed tablet is impossible (Kurth, 1997). If swallowing or mental status is impaired, PD patients should always be supervised when they take their tablets. Dysphagia and tube feeding are discussed in more detail later in this article.

Orthostatic Hypotension

Orthostatic hypotension is defined as a decrease in systolic blood pressure of at least 20 mm Hg, a decrease in diastolic blood pressure of at least 10 mm Hg within 3 minutes of standing, or both. Patients with orthostatic hypotension may be symptomatic with dizziness and fainting or asymptomatic (Onrot, 1998). Patients with late-stage PD are at risk for hypotension because of varying degrees of autonomic disturbance and the fact that many antiparkinson drugs lower blood pressure (Mathias, 1998). PD patients with a combination of postural hypotension and severe impairment

of postural reflexes are major candidates for falls and fractures. Five-minute supine followed by 3-minute standing blood pressure recordings are essential as diagnostic measures. Triggers for dizziness and fainting in PD patients are as follows:

* adding dopaminergic drugs to the regimen of a patient who is already taking antihypertensives or other blood pressure-lowering drugs (e.g., tricyclic antidepressants)
* increasing the dose of antiparkinson drugs too quickly, particularly dopamine agonists
* taking dopaminergic drugs on an empty stomach
* the hour following medications or a meal
* getting up too quickly from a recumbent position after a bowel movement or urinating
* warm weather, dehydration, and hot baths.

Strategies to prevent dizziness and fainting include the following:

* Increase fluid and salt intake.
* Have a drink of clear liquid, tea, or coffee before rising and sit on the edge of the bed for 5-10 minutes before standing (see hydration; Hodder, 1997).
* Remain seated for 20-30 minutes after a main meal or dose of medication and for a few minutes after a bowel movement.
* Sit down to towel off after a hot bath or shower and to urinate (men).
* Stay out of hot sun.
* Never stand still (particularly after exercise) because blood will pool in the legs (Calne, Baisley, Coughlan, Shaw, & Traviss, 2003).
* Reduce, stop, or replace other drugs known to lower blood pressure.
* Take medications with food.
* Increase medication doses slowly (every 5-7 days).

If postural hypotension persists despite these measures, a physician may order an antihypotensive agent such as fludrocortisone or midodrine (Mathias & Kimber, 1999). Surgical support stockings can be expensive and tend to be abandoned due to the difficulty in putting mere on, for a full review of orthostatic hypotension, see Mathias mad Kimber (1999).

Genitourinary

PD patients most commonly experience urinary problems such as frequency and urgency, though retention can result from the use of anticholinergic drugs (e.g., trihexyphenidyl, benztropine). A significant challenge for the clinician is determining whether a patient has a surgical problem such as prostate hypertrophy or whether the symptoms are related to autonomic dysfunction fur which surgery not only does not help but can actually exacerbate the problem (Chandiramani, Palace, & Fowler, 1997). An evaluation by a urologist is necessary to exclude obvious urinary problems such as prostatic hypertrophy. If urinary tract and swallowing problems are present and significant soon after the onset of parkinsonism, this may signify that the patient has multiple system atrophy (MSA), which can mimic PD (Hodder 1997).

Nurses can recommend that their patients ask their urologist to talk to their neurologist before making any decisions about whether to undergo surgery. For both male and female patients, incontinence pads may be preferable to having a surgical procedure that could be ineffective. Modern pads are unobtrusive and come in a variety of designs. Patients can be reassured that the use of incontinence pads is widespread and that their use may be preferable to living with the anxiety of incontinence, which eventually leads to social isolation. Male patients may find using a condom catheter particularly useful when traveling; however, late-stage patients may need assistance applying it.

Sexuality

It is important that nurses not make assumptions about sexuality in elderly patients with chronic disease. Sexual dysfunction is common ha both men and women as they age and PD can exacerbate it (Basson, 1996; Welsh, Hung, & Waters, 1997). Sexual dysfunction may be due to a variety of problems that include autonomic dysfunction, depression, diabetes, hypothyroidism, fatigue, and loss of self-esteem. Patients may have difficulty achieving or maintaining an erection or reaching orgasm. In patients who are severely disabled, the act of coitus may be physically impossible but the need and wish for sex remain. A variety of therapeutic

approaches is available for both men and women, but when a couple is involved, both should be involved in any discussions about treatment (Calne & Basson, 2000). Hypersexuality due to "dopa mania" or a premorbid pattern of sexual behavior can be a source of distress to the patient, spouse, family, and nursing staff members in care facilities (Robinson, 2003; Uitti et al., 1989). A consultation with a member of a sexual medicine clinic can be helpful for both the patient and the staff. Team nursing in these circumstances can reduce unwanted interactions between patients and staff members.

Nutrition, Hydration. and Elimination

Patients with late-stage PD may develop dysphagia, which may lead to weight loss, insufficient drug intake, dehydration, choking, aspiration, and death (Bine, Frank, & McDade, 1995; Clarke, Gullaksen, Macdonald, & Lowe, 1998; Cushing, Traviss, & Calne, 2002). Some patients who are cognitively intact and with fewer disabilities may benefit from intensive therapy to improve swallowing (Sharkawi et al., 2002). Patients who have difficulty chewing and swallowing their food should adopt an upright and chin-down position. Food that is sour to the taste may be easier to swallow (Logemann et al., 1995). The sourness may provide a proprioceptive cue to swallow. For the same reason, patients with dysphagia may be able to swallow carbonated rather than clear liquid liquids (Cushing et al.).

Caregivers should know how to perform the Heimlich maneuver. If a patient's level of swallowing impairment and frequency of choking episodes are disproportionately worse than other physical symptoms and cognitive state and if he or she can tolerate anesthesia, a gastrostomy feeding tube may be considered. The patient can then obtain sufficient drug therapy and nutrition without choking. All drugs (excluding controlled-release preparations) can be crushed with a little water and put down the tube, which is then clamped for 30 minutes (Calne & Calne, 1997). However, the long-term implications and consequences of inserting any kind of feeding tube should be discussed fully with the patient, family, and care team (Keizer, 2001).

Smaller meals supplemented with high-energy snacks enable the patient to obtain adequate nutrition (Cushing et al., 2002). Some vocal proponents still promote a protein-restricted diet that enjoyed some popularity in the late 1980s (Pincus & Barry, 1987). It was effective for only a very limited number of patients, expensive, and difficult to adhere to in a home setting (Pare, Barr, & Ross, 1992). The introduction of controlled-release levodopa has eliminated the need to adopt protein restriction as a therapeutic intervention (Cushing et al.). However, distributing protein evenly throughout the day can be an effective measure for those patients who suspect an interaction between protein and their antiparkinson drugs (Carter & Nut-t, 1995; Cushing et al.).

The lay press has expressed concerns about dairy products and their interaction with drugs for PD, and many PD patients have abandoned them for no proven reason. The general public, including PD patients, also has been persuaded that they are lactose intolerant and eschew dairy products as a result. Lactose intolerance is much more rare than is generally believed (McBean & Miller, 1998). Suarez, Adshead, Fume, and Levitt (1998) have shown that even people with lactose malabsorption can tolerate enough dairy product to obtain 1,500 mg calcium a day. Patients with advanced PD need the easily digested protein and calcium that dairy products provide (Cushing et al., 2002).

Bradykinesia may interfere with eating. Pre-cutting food before serving it to a patient will reduce self-consciousness and promote good nutrition. Some PD patients may prefer eating alone because the anxiety of keeping others waiting. The spluttering, choking, and feeling of being part of a spectator sport may interfere with their ability to enjoy their food (Cushing et al., 2002).

Frequent meals and snacks require extra attention to dental hygiene. A compact-head electric toothbrush is useful because little wrist movement is necessary. If PD patients have neither teeth nor dentures, a dietitian can advise on calorie requirements and food preparation (Cushing et al., 2002).

Maintaining adequate hydration is important for PD patients who are prone to constipation, orthostatic hypotension, and drug psychosis (Calne & Calne, 1997). This is difficult even if liquid is close at hand, because

the patient may not be able to lift the glass, and someone else has to remember to offer liquid throughout the day. Even mild temperature increases can induce dehydration if fluid intake is inadequate (Calne et al., 1997). Sorbets, smoothies, and fruit are mostly water, mad patients might find these easier to swallow. If excess nocturnal micturition is an issue, patients can drink as much as possible before 4 pro, then use liquids to aid in swallowing food and tablets only until bedtime.

Impaired swallowing and a stooped posture can cause accumulation of saliva, resulting in drooling, choking episodes and excoriation around the mouth and chin. Pal, Calne, Calne, and Tsui (2000) have shown that **botulinum** toxin injections can be an effective treatment for excessive saliva. Rinsing the mouth before meals with something cold and sour (e.g., lemon juice and soda water) can improve the enjoyment of eating by drying saliva secretions.

Chronic constipation is common in all stages of PD. Patients experience two kinds of constipation: (a) dry, hard stools that are painful to pass and Co) incoordination of rectal muscles that prevents normal stool from being expelled (Ashraf et al., 1995). Antiparkinson drugs, slowed gut motility, immobility, and dehydration may all be responsible. Although a daily bowel movement is unnecessary, patients should not go for days without one. Stool softeners and gentle laxatives such as fruit lax, small doses of bulking agents, or milk of magnesia may be needed daily. Stronger laxatives, suppositories, and enemas may also be needed. A washcloth wrung out in warm water or a finger can stimulate sluggish rectal muscles (Ashraf et al., 1995). The routine need for laxatives must be balanced against the fact that patients with PD who are constipated have increased susceptibility to life-threatening complications such as obstruction, perforation, volvulus, mid paralytic ileus (Marinella, 1997; Pfeiffer & Quigley, 1999; RosenthaI & Marshall, 1987). Nurses can reinforce the need for a good preventive bowel management program. See Pfeiffer (1998) for a complete review of gastrointestinal problems in PD. A Parkinsonspecific bowel management program is available from Parkinson Society Canada (www.parkinson.ca).

Mobility, Safety, Exercise, and Communication

Mobility in late-stage PD may eventually be severely impaired and, when combined with severe bradykinesia, can result in most of the waking hours being spent performing activities of daily living (ADLs; Andersen, 1999; Berry & Murphy, 1995; Carter et al., 1998). The combination of decreased mobility, postural instability, and gait disturbance increases the risk for falling and fractures (Gray & Hildebrand, 2000; Rajput, Pahwa, Pahwa, & Rajput, 1993). Falls represent one of the biggest concerns in middle- to late-stage PD for the patient who is still mobile. A hip fracture in a PD patient who is frail and elderly can be catastrophic. The use of hip protectors has been studied in Scandinavia due to the higher incidence of osteoporosis in this area. Kannus et al. (2000) studied the use of hip protector pads in a large group of elderly Finnish patients at risk for falling. They found a statistically significant reduction in fractures among those patients at risk who consented to wear them. Rates were 21 per 1,000 person-years in the hip protector user group and 46 per 1,000 in the control group. In an editorial accompanying the paper, Rubenstein (2000) wrote the following:

> Hip protectors offer a powerful new method for reducing the risk of hip fracture. Their use should be strongly encouraged for persons at increased risk (i.e., those with osteoporosis and a high risk of falling, such as those with impaired gait or balance and weakness) and particularly for those residing in healthcare institutions, because they are likely to be frail. Future research should focus on ways to improve the acceptability of hip protectors and on better defining time subgroups that can derive particular benefit from their use (pp. 1562-1563).

At the Pacific Parkinson's Research Centre, Vancouver, BC, Canada, experience has shown that patients still need to be convinced of their risk for falling and that hip protectors are most effective when used in a facility where trained staff can help residents with their use.

Complications such as hypostatic pneumonia and **pressure sores** may develop, resulting in accelerated debility. Rehabilitation consultations are appropriate for decisions about safety and assistive devices such as canes, walkers, wheelchairs, and protectors for the hips and knees. The decision to use assistive devices should be individualized, because inappropriate devices may be more of a hindrance than a help. For instance, walkers with wheels seem to increase time festinating gait, and patients may fall over the walker (Melnick, 1993). Patients can fall in homes that may be "minefields" of slip rugs, end tables, and tight corners. Patients with PD also may fall as a result of poor vision and cataracts (Dargent-Molina et al., 1996) or poor visual contrast (Hutton, Morris, Elias, Varma, & Poston, 1991). For example, a patient with PD may trip over a brown rug on a brown floor or not be able to distinguish the sidewalk from the pavement. Eyeglasses with light blue lenses may sharpen contrast (Hutton & Morris, 2001; Hutton, Morris, & Elias, 1993). Stooped PD patients who wear bifocal lenses may trip while walking, because they are looking through the reading portion of their lenses. A PD patient who falls frequently, whether at home or in a facility, would benefit from an occupational or physical therapy assessment. Pastural hypotension is another important cause for falls in PD, and the need to try and accommodate this cannot be overemphasized.

The amount of exercise a patient can tolerate depends on the level of disability. Exercise should be undertaken when drug efficacy is at its best. Even regular simple exercise such as walking and stretching is good for self-esteem (Baatile, Langbein, Weaver, Maloney, & Jost, 2000), but no studies have yet determined whether physical exercise benefits subjects with neurological impairment in patients older than 65 years (Eldar & Marincek, 2000).

When late-stage PD patients require regular assistance for ADLs, their rigidity puts nurses and other caregivers at risk. Performing ADLs or carrying out exercises with an immobile "off" patient or transferring such a patient can result in injury to both patient and caregiver. Wherever possible, ADLs and exercise should be timed to coincide with optimum drug benefit. This is impractical when the patient is bedridden, because there may be no noticeable periods of drug benefit. Nurses should not try to care for these patients without help under these circumstances.

Cramps are common in PD, and patients who keep their muscles and tendons stretched may overcome them more easily (Calne et al., 2003). In bed-bound patients, active or passive movements, frequent changes in position, and simple breathing exercises can prevent complications such as contractures, **pressure sores** , deep-vein thrombosis, and hypostatic pneumonia. At this stage the patient will be unable to cooperate fully and the body will be rigid. Nurses must practice good body mechanics when helping these patients, and they can reduce the risk of personal injury by not working alone.

Hypophonia due to PD can be treated with percutaneous collagen augmentation of the vocal folds (Berke, Gerratt, Kreiman, & Jackson, 1999). Some patients benefit from speech therapy sessions (Sharkawi et al., 2002). However, the intensive Lee Silverman Voice Therapy (LSVT) program reported by Sharkawi et al. requires enormous effort on file part of the patient and may not be realistic in patients with PD who are severely disabled. With anarthric or aphonic patients, asking yes/no questions, avoiding questions with multiple-choice answers, and using alphabet boards or devices, such as speaking dictionaries, may help with communication.

Sleep Disturbances

Sleep disturbances are common in PD (Bliwise et al., 1995; Pal, Calne, Samii, & Fleming, 1999). Excessive daytime somnolence can be due to any dopaminergic drug (Hobson et al., 2002; Sanjiv et al., 2001). This finding is contrary to earlier reports that daytime somnolence occurred with only ropinirole and pramipexole (Etminan, Samii, Takkouche, & Rochon, 2001; Frucht, Rogers, Greene, Gordon, & Fahn, 1999). Drug-induced insomnia is almost always due to selegeline, which during its metabolism is converted to amphetamine (Cable, 1993). Levodopa-induced vivid dreaming can be reduced by taking the last dose several hours before bedtime, though this may decrease nocturnal mobility. Some common suggestions for regulating sleep, such as getting out of bed and doing something else if they can't sleep, are impractical for PD patients. It may take a PD patient

and caregiver an hour just to prepare for bed (Pal et al., 1999). Nurses can, however, recommend that patients do not

* go to bed hungry
* have a hot bath or shower less than 2 hours before bedtime
* exercise less than 2 hours before bedtime
* watch television in bed.

See Pal et al. (1999) for a full review of sleep disturbances.

Depression

Depression can occur in as many as 50% of PD patients and have a serious effect on them (Aarsland, Larsen, Karlsen, & Tandberg, 1999; Cummings, 1992). Depression shares many features with late-stage PD (Table 4) and is not easy to detect in patients who are severely disabled. In patients with PD, depression can result in loss of interest and cooperation, which interferes with care delivery. Most antidepressants, including tricyclics and selective serotonin reuptake inhibitors (SSRIs), are well tolerated once early side effects subside and can be taken with antiparkinson therapy (Oertel et al., 2001). Venlafaxine has been shown to be particularly useful in PD because it has no hypotensive effect (Oertel et al.). Electroconvulsive therapy (ECT) can be a highly effective treatment PD patients with depression (Hurwitz, Calne, & Waterman, 1988; Moellentine et al., 1998). Both depression and dementia may be exacerbated by drug-induced psychosis (Aarsland, Larsen, Cummins, & Laake, 1999; Factor et al., 1995; Hurwitz & Calne, 2001). See Oertel et al. (2001) for a comprehensive review of depression in PD.

Drug Psychosis, Confusional States, Hallucinations, Delusions, and Dementia

Drug psychosis and confusion can occur in PD with or without dementia. Confusion refers to a sudden onset of disorientation and muddled thinking that may also be associated with hallucinations and delusions (Hurwitz & Calne, 2001). A nurse may be the first healthcare professional to notice behavioral changes and will thus be in a position to rule out treatable causes such as

* incorrect use of antiparkinson drugs over the last few days
* side effects from, or interactions with, other prescription drugs, over-the-counter supplements, and meperidine
* recent general anesthesia
* recent fever with or without a known infection
* recent travel involving timing and dosing changes
* dehydration
* constipation.

If these causes can be excluded, a physician or advanced practice nurse may order a slow reduction of drug dosage until the confusion or psychosis clears. Unfortunately, the dose at which the sensorium clears is often too low to maintain an adequate level of mobility and may threaten the integrity of the swallowing reflex (Calne & Calne, 1997). Nurses can provide support to the patient while these changes are being undertaken. Family members will appreciate explanations of the difficulties derived from maintaining a clear mental state at the expense of mobility.

Unlike older drugs, such as haloperidol and risperidone, newer antipsychotics such as quetiapine appear not to worsen PD significantly and may be ordered in small doses to provide a balance between maintaining mobility and limiting psychosis (Feedman, 1998; Fernandez, Friedman, Jacques, & Rosenfeld, 1999). Both depression and dementia may be exacerbated by drug-induced psychosis (Aarsland, Larsen, Cummins, et al., 1999; Factor, Molho, Podskalny, & Brown, 1995; Hurwitz et al., 2001).

Hallucinations are sensory experiences without cause, such as seeing or hearing things that are not there. Any dopaminergic drug can cause hallucinations. PD patients on dopamine agonist often report seeing small animals or small children. Reducing drug dosage eliminates hallucinations in the long term (up to 6 weeks), but reduces mobility almost immediately (Calne, 1993). Patients who have insight may choose to live with nonfrightening hallucinations if their drugs are providing good mobility (Calne & Calne, 1997). Family members are often more disturbed by the hallucinations than the patient. Nurses may need to explain to them why the patient has chosen to live with them. However, nurses can monitor patients and immediately report hallucinations that become threatening. They can advise family members to do the same

Paranoid delusions are fixed irrational beliefs, such as when patients believe they are being spied on or that others want to harm them. Elderly patients who are delusional frequently feel they are being poisoned, usually by a spouse or caregiver, and these delusions can interfere with nutritional status and adequate drug intake (Melamed, Friedberg, & Zoldan, 1999); this is distressing for everyone involved with care. If changes in drug therapy are not helpful, the nurse may have to work with family members to identify someone who is not a perceived threat to the patient to deliver food or medicines.

PD patients who are approved for anesthesia and who experience severe drug-induced psychosis that is resistant to changes in drug therapy may benefit from ECT (Factor et al., 1995; Hurwitz et al., 1988). A course of ECT can enable a patient with PD to take a therapeutic dose of antiparkinson drugs and can also provide temporary benefit to PD symptoms (Rasmussen & Abrams, 1991) and depression. To allay the fears of the patient and family, nurses can provide factual information about modern ECT, its benefit, and safety.

Dementia refers to slow loss of memory and other intellectual abilities that interfere with an individual's ability to function. Dementia is usually steadily progressive, making the individual increasingly dependent on others for his or her survival. Treatable causes such as vitamin B-12 deficiency, thyroid deficiency, and depression should be excluded (Cummings, 1988). About 30% of patients with PD develop some form of dementia. Both dementia and psychiatric drug side effects in PD (Table 2) can limit therapeutic options and have a profound effect on the ability to provide adequate physical care or emotional support (Calne & Calne, 1997). The nurse may be the primary professional support for the family of these patients, some of whom will still be cared for at home under difficult circumstances. A nurse's ability to listen and provide even simple suggestions for care will he invaluable to caregivers (Greenberger & Litwin, 2003). See Wolters and Francot (1998) for a review of mental dysfunction in PD.

Comorbidities and Complications

Comorbidities such as osteoporosis, arthritis, diabetes mellitus, cancer, and heart disease exacerbate PD (Bozek & Calne, 2001). Treatment of these problems adds to the burden of medication timing and compliance. Unlike patients at earlier stages, patients with late-stage PD rarely return to previous levels of functioning following an acute illness. Patients who have not succumbed to life threatening illnesses such as cancer, stroke, or myocardial infarction eventually die from the complications of being bed or altair bound due to rigidity, failure to recover from fractures, aspiration pneumonia, **pressure sores** , an. chronic urinary tract infections (Gorell, Johnson, & Rybicki, 1994). Measures such as chest physiotherapy to prevent hypostatic pneumonia and frequent changing of position, together with the use of water beds and egg crate mattresses to prevent **pressure sores** , are necessary.

End-of-Life Care

Nurses, whether providing care in acute care hospitals, long-term-care facilities, or community-based settings, are most often the healthcare professional present when a patient is dying. Most patients with PD will have lived an extraordinarily long time with their illness, much of it in a disabled state. As death approaches, nurses who understand PD and its lengthy ramifications are in a unique position to provide the best physical and emotional care to the patient, and emotional support to the family, in a compassionate environment. If acutely ill patients are transferred from home or facility, it is most often to an acute care facility. Although the quality of care in a hospice is highly desirable, space is scarce and PD patients may actually die from an acute infection such as pneumonia over relatively few days, with little pain. Keeping patients comfortable in already familiar surroundings may be preferable. Doing one's best to ensure that the patient has peaceful death is a valuable goal; the death of the patient should not be construed as failure by the nurse.

Summary

Advanced PD is characterized by debilitating physical and neurobehavioral problems requiring skilled nursing rehabilitation, and medical attention. Increased recognition of these problems by healthcare

professionals can only improve the quality of care these patients need and deserve. Nurses are the essential component of the multidisciplinary team needed to age late-stage PD. They are often proximate caregivers and form a vital link between the patient and other healthcare professionals.

Table 1. Signs and Symptoms of Parkinson's Disease

Signs	Symptom and Treatment Response Summary
Primary	
Tremor *	First symptom in 70% of patients; begins on one side, present at rest but there can be a postural component, socially distressing but does not interfere with activities of daily living. Often poorly controlled by medication.
Bradykinesia *	Slowness and poverty of movement; fine movements become clumsy; difficulty initiating movement (getting out of a chair) with arrests of ongoing movement (e.g., turning corners, going through doorways). Responds well to treatment.
Rigidity *	Increased tone and stiffness in the muscles at rest. Responds well to drug therapy.
Postural instability	Inability to make the required rapid adjustments to the body's center of gravity when standing and walking. Poor response to drug therapy; major cause of falls; rehabilitation therapy helpful. (dagger)
Secondary	
Hypomimia	Lack of facial expression resembling flattened affect of depression; reduced blink rate. May respond to drug therapy.
Hypophonia	Soft voice; speech loses rhythm and shading. May respond to drug therapy or intensive speech therapy.
Micrographia	Small, cramped, handwriting. May respond to drug therapy. Everyday tasks take longer and require more concentration. Symptoms disturb sleep. Drugs for PD can induce somnolence. (dagger)
Fatigue	
Depression	As many as 50% of PD patients have an episode of endogenous depression during their illness. (dagger)
Constipation	Immobility, slowed gastric motility and drug therapy contribute to constipation. (dagger)
Pain	Cramping and muscle stiffness, increased mobility can aggravate preexisting joint disease.

* Made worse by anxiety

(dagger) More detailed discussion in text

Table 2. Medical and Surgical Treatment for Parkinson's Disease

Drug Therapy	Benefit and Use
Levodopa with carbidopa Sinemet CR (controlled release) Standard Sinemet (immediate release) *	Used as first-line treatment for many patients; improvement in mobility and activities of daily living and, in some cases, mood; fewer side effects with controlled-release preparations; frequently used in combination
Levodopa with benserazide (unavailable in USA) Prolopa, Madopar	

	with COMT inhibitor and/or dopamine agonist.
Catechol-O-methyltransferase inhibitors (COMT) Entacapone (Comtan)	Prevents peripheral breakdown of levodopa; used to extend benefit of levodopa doses and reduce wearing off reactions.
Dopamine agonists Bromocriptine (Parlodel) Pergolide (Permax) Ropinirole hydrochloride (ReQuip) Pramipexole dihydrochloride (Mirapex)	Used as first-line treatment, particularly for young onset patients, less likely to cause fluctuations and dyskinesia; used in combination with levodopa.
Anticholinergics, amantadine and deprenyl Trihexyphenidyl (Artane) Apo-trihex Benztropine (Cogentin)	May help reduce tremor and to a lesser extent, bradykinesia and rigidity.
Amantadine (Symmetrel)	May relieve rigidity; recently shown to help suppress dyskinesias.
Deprenyl or Selegiline (Eldepryl)	Mild effect on symptoms; mild antidepressant effect.
Stereotactic Surgical Treatment Thalamotomy Pallidotomy	Tremor. Improves dyskinesia and rigidity.
Deep-brain stimulation of pallidum or high-frequency stimulations of subthalamic nucleus	Improves dyskinesia and tremor and rigidity.
Drug Therapy	Problems and Side Effects
Levodopa with carbidopa Sinemet CR (controlled release) Standard Sinemet (immediate release) * Levodopa with benserazide (unavailable in USA) Prolopa, Madopar	Nausea and loss of appetite, hypotension; "wearing off" effect (symptoms reappear before the end of the dose interval); dyskinesia (free-flowing involuntary movements or painful dystonia); "on off" effect (abrupt oscillations between mobility and rigidity) resulting from long-term, high-dose treatment, nightmares and vivid dreams, confusion at high doses or in frail elderly subjects.
Catechol-O-methyltransferase inhibitors (COMT) Entacapone (Comtan)	Precipitates side effects of levodopa, particularly dyskinesia; diarrhea (rare).
Dopamine agonists Bromocriptine (Parlodel) Pergolide (Permax) Ropinirole hydrochloride (ReQuip) Pramipexole dihydrochloride (Mirapex)	Nausea, vomiting, hypotension; mild non-frightening hallucinations; frightening hallucinations, delusions; confusion; difficult to achieve benefit comparable to levodopa without inducing side effects.

Anticholinergics, amantadine and deprenyl	
Trihexyphenidyl (Artane) Apo-trihex Benztropine (Cogentin)	Confusion, dry mouth, blurred vision, urinary retention.
Amantadine (Symmetrel)	Psychosis, particularly in the presence of renal impairment, withdrawal psychosis, livedoreticularis (spidery red markings on lower legs).
Deprenyl or Selegiline (Eldepryl)	Insomnia; increases side effects of levodopa.
Stereotactic Surgical Treatment	
Thalamotomy Pallidotomy	Dysarthria, stroke (rare). Cognitive and behavorial disturbance (rare).
Deep-brain stimulation of pallidum or high-frequency stimulations of subthalamic nucleus	Electrode may break and site may become infected (rare); stimulator needs to be regulated and battery replaced.

* Generic versions available

Table 3. Modified Hoehn and Yahr Staging of Parkinson's Disease

Stage	Description
0	No signs of disease
1	Unilateral disease
1.50	Unilateral plus axial involvement
2	Bilateral disease without impairment of balance
2.50	Bilateral disease with recovery on pull test
3	Mild to moderate bilateral disease; some postural instability; physically independent
4	Severe disability; still able to stand or walk
5	Wheelchair bound or bedridden unless aided

Note. From "Paikinsonism: Onset, Progression, and Mortality," by M.M. Hoehn and M.D. Yahr 1967, Neurology, 17, 427-442.

Table 4. Similarities Between Late-Stage Parkinson's Disease and Depression

Late-Stage PD	Depression
Loss of spontaneous facial expression	Loss of spontaneous facial expression
Slowed executive function	Slowed executive function
Lack of concentration	Lack of concentration
Impaired cognitive-intellectual functions due to Parkinson's dementia	Impaired cognitive-intellectual functions due to depressive pseudo-dementia
Agitation, anxiety	Agitation, anxiety
Hallucinations, delusions, paranoia	Hallucinations, delusions, paranoia
Constipation	Constipation
Sleep disturbance	Sleep disturbance
Inability to pursue hobbies and interests due to physical symptoms	Inability to pursue hobbies and interests due to apathy
Decreased sexual activity due to immobility, loss of libido	Decreased sexual activity due to loss of libido and drug therapy

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Search terms: Cerebral palsy, muscle spasticity

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Nurses in the News

JSPN congratulates ...

Dr. Colleen Goode who recently received Nurseweek's Nursing Excellence Award in Leadership.

Scott Governo, MSN, CS-FNP/PNP, who recently received the 2002 Excellence in Maternal-Child Health Nursing Practice Award from the South Carolina Nurses Association. He received the award for his work with the McLeod Healthy Foundations for Children program in Florence, SC, where he is the Director. This program has a community focus on neurodevelopmental disorders, parenting skills, and psychosocial issues in families of infants and young children.

Betsy McDowell, PhD, RN, CCRN, a faculty member at Lander University, Greenwood, SC, was also the recipient of a 2002 Excellence in Maternal-Child Health Nursing Practice Award from the South Carolina Nurses Association. Dr. McDowell was recognized for her volunteer service in the Greenwood community, where she leads a weekly support group for children at MEG's House (a shelter) chairs the Injury Assessment Committee for the Greenwood Children's Health & Safety Council, and is treasurer for the Greenwood SafeKids Coalition.

DESCRIPTORS: Baclofen--Complications; Children--Care and treatment; Health care industry--Standards; Nursing--Standards
GEOGRAPHIC CODES/NAMES: 1USA United States
EVENT CODES/NAMES: 350 Product standards, safety, & recalls
PRODUCT/INDUSTRY NAMES: E121920 (Children)

16/9/17 (Item 6 from file: 149)

DIALOG(R)File 149:TGG Health&Wellness DB(SM)

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Using medication and therapy to treat ataxia.(Column)
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TEXT:

I was asked three years ago to write an article for a journal for neurologists about the treatment of ataxia. My initial thought, after all of those years of practical involvement in the ataxia center, was that this is going to be a short article. I wouldn't be able to say a whole lot, controlled studies had not been done. Despite that, it turned out to be a nice sized article and gave me a refocus on the things that can be done while we are waiting for stem cells, and the fish research to turn into mouse research to turn into human trials. Indeed we will be seeing these things in three years, five years, 10 years depending on the complexity, but what do you do on a day to day basis? What can you do to improve symptoms of ataxia?

We see things on TV and hear about things on the radio so it is important for us to be aware and to understand what each of these things mean for us. There are several types of evidence. Class I evidence is the best and is provided by one or more well designed, randomized, controlled double blind placebo studies. Two or three groups, that have had studies published, using placebos, and double blind mechanisms compare studies to get the broader picture of the usefulness of a particular treatment. This is the "gold standard." If a drug or a treatment has not had this type of a study done then you can never say if it is going to be helpful or if you can expect it to be helpful.

Class II evidence is the more common study that you read about. It is the easier one to do. They are well designed studies where we know what the diagnoses are, and we know some background on the agents being studied. There are observations done over time, it is not just a single clinic visit, there are several visits with data collected. There may be controls, people who are not doing the treatment, but it doesn't have the double blind aspect. It may not be randomized so there may be a little selection bias as to who tries the drug and who doesn't. Sometimes, it is prospective, you look ahead and get a group of people who all want to try COQ10 for example, so we put everyone on it and see what happens in the future. Sometimes it is retrospective, you see a group of people who have been using amantadine and look back to see what changes might have occurred. The data that comes out of these studies, although captivating and interesting and can make people want to try the drugs, is not robust.

Class III evidence is provided by expert opinions. I provide a lot of advice and I have to stop myself and ask, "Do I really want people to carry this away as something that is going through the mythology of ataxia and have people believe it without a study being done?" You have to be careful of case series (anything more than one patient). The initial case series that reported the benefit of an antibiotic in Joseph's disease was a series of one. It was a case report on one patient and it took all these years for someone to do a double blind controlled study of the antibiotic and say whatever it did for that one patient is not carrying through significantly for other people. Will people stop using that antibiotic or other drugs that in observational studies looked like they were helpful until you get to the double blind study? There are a number of available agents that have had double blind studies done that were not so significant. You have a vast clinical experience and friends taking amantadine or buspar and they feel better, would the doctor stop prescribing it? Probably not. I have asked other physicians that have been the unfortunate recipients of research data that was not significant. They put a lot of money and time into designing a control study of a drug that looked like it should work on the drawing board. In open trials it looked promising but when they did a double blind placebo controlled trial the results were not significant. Maybe there was a tendency in the right direction but it wasn't statistically significant. I asked one of these people, "Are you going to continue to suggest that people try this medicine?" He looked embarrassed and said, "Yes, because there is enough symptomatic reports from patients that until something better comes along they should be allowed to try it, with knowledge of side effects, if they want to."

The case reports, uncontrolled studies, the case reviews, the sound bites that we hear catch our attention. At some point, if we are involved in clinical research, we need to move some of the good ideas up into the

controlled trials. That is what is going on with idebenone and FA. We will see it with other diseases and other candidate agents as well.

Treating ataxia: You have to know what you are trying to treat. All of these symptoms have been described by patients with ataxia and all relate to the cerebellum which is the main control center for coordination. In ataxia other parts of the nervous system and other parts of the body can be involved, but these are the symptoms that are felt to originate from changes within the cerebellum itself.

A review of neuroanatomy: the cerebellum sits in the back at the bottom of the brain and it connects to the upper brain. The upper brain communicates with the cerebellum getting together the movements you want to do. It communicates with the brain stem that controls eye movements and the inner ear signals that help us out with balance. It communicates with the spinal cord, the long spinal nerves that we have heard about with FA. It is important to know, in your type of ataxia, which area is having problems. Treatment for ataxia coming from the cerebellum versus ataxic symptoms from the brain stem, or the upper brain areas, or the spinal cord may be different because they are different groups of nerves and they run on different chemicals and behave differently under stress.

The cerebellum and its connections control walking, hands, speech and vision. The spinocerebellum are the long connections down the spinal cord. The upper brain, the cerebrum, gives voluntary commands, but if there is a problem in the upper cerebrum from multiple strokes you can have ataxia. It is almost indistinguishable from ataxia that comes from the cerebellum. MRI scans are very important in figuring out which part of the brain is involved. The inner ear and its connections cause dizziness and vertigo and can contribute to instability and feelings of imbalance. Changes in sensations, if your feet are numb you are not getting good sensory signals, the cerebellum is not getting feedback ("garbage in, garbage out"). You are not getting good signals coming out which is a major cause of ataxia in patients with FA. The incoming sensory signals are not being provided and the cerebellum, which is essentially normal, cannot do its job. Each of the pathways run on different brain neurotransmitters and can respond to different medications.

The basal ganglia, in the upper brain, can be involved, causing stiffness, lack of movement, tremor at rest, twitches at rest, things that may look like Parkinson's disease. The upper motor neurons which run from the upper brain down the spinal cord may cause stiffness and spasms. The lower motor neuron and its muscles can cause weakness and fatigue. If sensory pathways are not normal, they cause numbness, tingling or pain. The autonomic nervous system controls bladder, bowel, and sexual function, so if there is a problem in the autonomic nerve these areas will be symptomatic. There are special sensory changes in the retina and optic nerve which control vision, and the auditory nerve that controls hearing. Rarely in ataxia will you have dementia. Severe progressive memory problems may be seen but are rare in most forms of ataxia. When a patient with ataxia has a notable dementia the choices narrow as to what type of ataxia it could be because it is very rare. Some people with certain types of ataxia have seizures or myoclonus which is severe jerking. All of the symptoms on the ataxia symptom list are treatable. Nobody with these symptoms should be told that they cannot be treated. You cannot stop the progression but you can certainly make the symptoms less.

Everyone deserves a screen for acquired factors, prior illness, toxic exposures, including alcohol or medication use that could lie behind their ataxia, or it could be a contributing factor. Just because you have an ataxia gene does not make you immune from other problems. Other medical illnesses, alcohol use, or other medications that are adding to the ataxia may need to be changed to treat the symptoms of ataxia. There could be other medical problems, thyroid imbalance, vitamin deficiency, other infections, syphilis, lyme disease. They are rare causes of ataxia, but can be tested for and are treatable. Rheumatologic disease can affect the cerebellum, immune system disease can affect the cerebellum and hidden cancers can affect the cerebellum. Even if you have a hereditary ataxia you are not immune from other conditions. If your ataxia is giving you more problems than are common for that type of ataxia, for example, you get worse over a couple of months as opposed to the more slower worsening, you have to think something else may be going on. It is easy to get complacent.

You see your doctor every six months for 10 years and the ataxia is still there and it is a little worse and all of a sudden it gets much worse. Something else must be going on. You could also have another genetic disease. There are case reports of individuals that have two genetic diseases. I have seen some in my clinic, we were aware of one disease but they had symptoms that didn't really go along with the disease we knew about in the family. It turned out they also had a totally different disease.

Where to get more information: this is what the doctor will do after he has finished the initial work up and has ruled out the obvious and doesn't have an answer about the type of ataxia. You go to the medical search engines and you search and look.

Publications about treatment: Dr. Gomez wrote a beautiful review in a text book that deals with therapy in neurologic disease and treatment of the inherited ataxia. In a different journal I wrote an article and it dealt with treatment. You can get copies of the articles from a medical library. Your doctor may want to read one or Dom of the articles just to get a sense of what can be done.

Worrisome symptoms: we talked about average symptoms, if they change they change slowly you have time to decide if you want to take a medicine for them or if you want to watch them longer. It is important for you to know things that you don't want to sit on: if you are having severe stiffness and spasms, severe problems with blood pressure, bladder, bowels, choking, breathing or sleeping they should be checked out right away. You don't want to wait until the next ataxia conference to discuss it in "Birds of a Feather." You probably want to ask you doctor about it right away. Increased falling or becoming chair or bed bound, are concerns because they are a change in status of the illness and can lead to injury, bed sores, infections, all the complications of inmobility. If you have become chair bound and having frequent falling you need to decide what you are going to do about it to prevent problems. Dementia, behavioral problems or depression can happen even if your ataxia isn't associated (people get depressed when they are facing a challenging medical problem). These things need to be addressed either with counseling or with a compassionate physician or family member that can work with the individual. Anyone who is depressed or having behavioral problems within the family unit or with their care giver management is going to have more difficulty with compliance with regimens, and care giving is going to be more difficult. If there is depression or behavioral issues maybe the person has always been stubborn and now they are 10 times as stubborn and that is a problem.

There are some disease specific factors. In Friedreich's, an earlier onset, as young as five, implies a bigger burden of triplet repeat and may cause a faster progression to a wheelchair. In the young population the risk of ending up in a wheelchair while they are still in school is very great. The later onset, somebody who develops FA symptoms in high school, can probably remain ambulatory using aids or the assistance of physical therapy. The earlier onset has a higher risk of heart disease, severe scoliosis, diabetes, vision and hearing problems which need to be screened for. You need to set up a health maintenance program with your child that covers these things on some sort of schedule to make sure they are not becoming part of the problem. In Ataxia Telangiectasia of younger children there is a high risk of immunodeficiencies with recurrent infections and a noticeable risk of cancer especially leukemia/lymphoma and carriers of the A-T gene may also have an increased risk of cancer, for instance breast cancer.

Available interventions: people ask me questions and I tried to make a list of the most common questions lam asked. What do I have? When I started seeing ataxia patients in 1977 we could tell about 10% of them what they had. Now, more than 50% of people with familial ataxia can be diagnosed with a specific gene. Can it be cured? No, but it is closer. Can it be treated? In 1977 no drugs had been tested. Rehab, exercise and physical therapy was known to help. Now, in 2002, 18 different medications have been tested, most in open trials, but some in controlled trials and rehab still helps and we have some scientific backup to prove it. Is there research? In 1977, 223 articles about ataxia were cited on the medical search engines and in 2001, 902 articles, with the key word ataxia, were cited. There is definitely research and most are research articles. Are my

children at risk? In 1977 there were no gene tests available and genetic counseling was "seat of your pants," this is what is going on in your family and this is what your kids can expect. You have a sporadic ataxia but there is a chance that it is a new onset, dominant. So many of my ataxia patients started to worry about their kids for 20 years. In reality, there is no genetic risk for the descendants of many of those with sporadic ataxia. Now, we have 16 gene tests for different related ataxia syndromes. Your doctor can order them, and more are on the way. It is definitely looking better.

Treatment goals: treat the known causes. If there is a vitamin deficiency, replace the vitamin. Sometimes diet modification can help. Detoxification therapies are being looked at for Wilson's disease where there is a copper problem, and it is being looked at in FA where there is an iron problem. Where there is a known cause, simple things like diet or replacing a missing nutrient or detoxifying a identified toxin can be helpful.

Improved performance: use drugs to treat symptoms. Rehab and retraining which is physical therapy of nerve pathways really helps. Prevent innocent bystander effects, use it or lose it. If you are not physically active or doing exercise you are going to develop muscle weakness that is not at all a part of your ataxia, but is going to become a part of your daily challenge. Improve your activities of daily living and quality of life using adaptive equipment or computers. Technology has made it easier for people who have lost certain physical abilities to make up for them. Slow up disease progression, the Robin Hood technique steal from other research groups that are doing this work.

Drugs for fatigue: pyridostigmine used for myasthenia gravis, amantadine used in MS, selegiline used in Parkinson disease, methyphenidate, modafinil a new drug proven to be helpful for fatigue in MS. In general, someone with crippling fatigue may benefit from the use of some these drugs. Amantadine may also help ataxia. For every study that shows benefit, there are two studies that show it doesn't, but people still prescribe it. Everybody who is not at risk for constipation should try it. They all help symptomatically in uncontrolled or single case studies. For every drug there is a non-drug technique for managing fatigue. You don't have to use medicine you can just implement these things in your life and relieve fatigue.

Rehabilitation for ataxia: the goals are safe mobility, independence in activities of daily living, better speech and communication, safe swallow or safe airway, better control of deconditioning, fatigue and pain. Rehab services should be initiated for everybody. Patients should be screened and get a program and they should do the program. Check in again in six months and update the program.

Physical therapy with repetitive exercises helps. What ever our concerns for overuse, there is a role for non fatiguing rhythmic repetitive exercise conditioning, stretching, all of the techniques that are available through rehabilitation services can help you even though you have a progressive disease. The disease is progressive, but this will help prevent the innocent bystander effects.

Medical consultants: if you have a problem in their area to go see them.

Much ado about antioxidants: I have given you a list of all the antioxidants that have been in the news, Be sensible about their use. You can get 90% of them "over the counter" and if the controlled trials are not coming up in your neighborhood, you are going to go to your drug store and look around for those things. You can use them, but you should tell your doctor you are trying them out. You should use one at a time. You should figure out what a reasonable dose range is. Ultimately the control trials will prove that they work, or they don't work but if you want to try any of them discuss it with your doctor or other ataxians that have tried them.

Motto for the new millennium (which will hopefully bring a cure for these diseases): there is no longer any excuse for a physician to tell a patient with ataxia that there is nothing that can be done.

There are still doctors out there telling patients that and it is a problem. If your doctor tells you this, try to educate him. Now that you are educated you can all be ambassadors back to your physicians, or find another doctor.

Don't give up too soon--doctors can learn. It is appropriate to try to educate the doctors that you have. There is no one with ataxia who cannot be helped in some way.

Symptoms of Ataxia

* Imbalance, falling
* Incoordination of hands, clumsiness, dropping things
* Tremors of head, hands or legs
* Slurred or slow speech, altered breathing/sleeping
* Difficulty swallowing, choking
* Blurred, jumping or doubled vision
* Dizziness or vertigo
* Fatigue
* Possible difficulty with reasoning, language, memory, or personality and behavior

Brain and Nerve Pathways that Cause Ataxia

* Cerebellum and its brainstem connections (different parts control walking, hands, speech, and vision)
* Spinocerebellum--connections to long spinal nerves
* Cerebrum (provides voluntary commands)
* Inner ear and its brainstem connections (main cause of dizziness or vertigo in ataxia)
* Sensation (provides feedback to the cerebellum)

Each of these pathways runs on different brain chemicals (neurotransmitters) and may respond to quite different medications.

Other Associated Neurologic Symptoms

* Basal ganglia-stiffness, lack of movement tremors at rest, twitches or jerks
* Upper motor neuron--stiffness, spasms
* Lower motor nerve, muscle-weakness, fatigue
* Sensation-numbness, tingling, pain
* Autonomic nerve-bladder, bowel, sexual dysfunction
* Special sensory-retina, optic nerve, auditory nerve
* Dementia-severe, progressive memory problems
* Seizures, myoclonus

Publications about Treatment

* C.M. Gomez, MD, PhD, "Inherited Cerebellar Ataxias." In Johnson, R.T., Griffin, J.W. McAurther, J.C., editors: Current Therapy in Neurologic Diseases, 6th edition. St. Louis: Mosby; 2001: 292-298.
* S.L. Perlman, MD, "Cerebellar Ataxia." In Current Treatment Options in Neurology 2000, 2:215-214.

Worrisome Symptoms

* It is important for the patient and the family to have some idea what to expect and to know what to watch for.
* Untreatable stiffness or severe problems with blood pressure, bladder, bowels, choking, breathing, or sleeping can cause dangerous medical complications.
* Increased falling or becoming chair or bed bound may lead to injuries, **bedsores** , or infection.
* Dementia, behavioral problems, and depression make management, compliance, and care more difficult.

Disease Specific Factors

* FRDA with a smaller GAA allele of more than 700-800 repeats may have

--earlier onset (as young as 5 y/o)
--faster progression to a wheelchair (as rapid as 3 y)
--greater risk of heart disease, diabetes, severe scoliosis, vision and hearing problems.

* Ataxia Telangeictasia is associated with a 60-80% risk for B/T cell immunodeficiencies (severe in 10%) with recurrent pulmonary infections a 38% risk for cancer (85% leukemia/lymphoma)

Drugs for Ataxia

* Amantadine, Memantine *
* Buspirone (Buspar)
* L-5hydroxyptophan *
* Physotigmine (Eserine)
* Thyrotropin releasing factor *
* Fluoxetine (speech, swallowing)

* Meclizine, Scopolamine
* Ondansetron (vertigo)
* Acetazolamide or Dilantin
* Baclofen#
* Carbamazepine#
* Clonazepam#
* Gabapentin#
* Isoniazid#
* Primidone#
* Propranolol#
* Valporic acid#
* **Botulinum** toxin shots#
* Flunarizine (episodic ataxia)
* Surgery, stimulators (#)
* not available in U.S.

(#) main use for tremor or nystagmus

Treatment Goals

* Treat known causes--diet, replacement therapies, detoxification therapies
* Improve performance--symptom specific drugs and rahab/retraining of nerve pathways
* Prevent innocent bystander effects--use it or lose it
* Slow up disease progression--the Robin Hood tactic
* Antioxidants (how much, which ones?)
* Neuroprotective drugs
* Gene therapy?
* Stem cell therapy?.

Drugs for Fatigue

* Pyridostigmine
* Amantadine
* Selegiline
* Pemoline
* Methyphenidate
* Modafinil
* Ruoxetine
* Ephedrine, Caffeine
* Creatine, Camitine
* Other illness, drugs
* Good nutrition
* Conditioning exercise
* Weight management
* Pain control
* Sleep hygiene
* Energy conservation
* Lifestyle modification
* Emotional health

Physical and Occupational Therapy

* Home or assisted exercise for coordination/balance
* Non-fatiguing, rhythmic-repetitive exercise
* Aerobic/conditioning programs
* Stretching
* Assistive devices
* Adaptive transportation
* Vestibular compensation exercises for dizziness
* Biofeedback, relaxation training
* Lifestyle modification/energy conservation

Medical Consultants

* Ophthalmology
* Ear-Nose and Throat
* Pulmonary/Sleep
* Gastroenterology
* Urology
* Cardiology
* Orthopedics
* Hematology/ Oncology, Immunology
* Pain Management

Much ado about antioxidants, free radical scavengers, and metabolic

stimuants
* Vitamin E (d-alpha tocopherol succinate)
* Vitamins C, B1& B2
* Selenium, Zinc, Copper
* Coenzyme Q10/Idebenone
* Creatine
* Omega fish oils (EPA)
* N-acetylcysteine (with E, B2, Selenium, Magnesium)
* Acetyl-L-carnitine
* Alpha lipoic acid
* The jury is still out on blue-green algae and noni juice. Never say Never.
* If a supplement has had some reasonable press, seems safe or has a few easily monitored side-effects, and is financially available--it might be worth trying for 3-6 months, rather than waiting for controlled trials.
* It is best to introduce one new supplement or drug at a time.

Dr. Susan Perlman serves as Clinical Professor of Neurology and as the Director of the Ataxia Center at the University of California at Los Angeles. Dr. Perlman has been involved, since 1979, with the evaluation, diagnosis, and symptomatic treatment of people with inherited and acquired ataxia. In the past 10 years, over 1,000 patients have been seen. The Ataxia Center at UCLA collaborates with other ataxia research groups and patient support organizations around the country and the world. The Ataxia Center professional staff includes Dr. Dan Geschwind, Dr. Joanna Jen, Dr. Stephen Cederbaum, Dr. Richard Gatti, and Dr. Stefan Pulst. Dr. Perlman has received funding from the National Ataxia Foundation for her important ataxia research efforts, and is a member of the NAF Medical and Research Advisory Board.

DESCRIPTORS: Ataxia--Care and treatment; Ataxia--Research
EVENT CODES/NAMES: 310 Science & research
FILE SEGMENT: HI File 149

16/9/18 (Item 7 from file: 149)

DIALOG(R)File 149:TGG Health&Wellness DB(SM)

02177867 SUPPLIER NUMBER: 100109267 (THIS IS THE FULL TEXT)

Holistic medicine & SCI: exploring the options: what is "holistic medicine?" How might it work for people with SCI?(spinal cord injuries)

Ryan, Jerry D.

Paraplegia News, 57, 4, 21(4)
April,
2003
PUBLICATION FORMAT: Magazine/Journal ISSN: 0031-1766 LANGUAGE: English
RECORD TYPE: Fulltext TARGET AUDIENCE: Academic; Professional
WORD COUNT: 2376 LINE COUNT: 00202

TEXT:

"John Doe," a C2 ASIA A (complete) person was five years postinjury. Prior to functional electrical stimulation (FES) therapy, he had a history of nine complications, ranging from urinary-tract infections (UTIs) to pressure ulcers. He incurred 49 various infections resulting in 527 days of antibiotic treatment. In the three years since beginning the FES therapy, he has had only one major complication and only nine infections resulting in just 64 days of antibiotic treatment.

Last fall, the National Spinal Cord Injury Association (NSCIA), the Arizona Chapter of the Spinal Cord Injury Association (AzSCIA), the Arizona Governor's Council on Spinal and Head Injuries, and the Arizona Paralyzed Veterans of America (APVA) sponsored "Exploring the Possibilities," the 2002 Spinal Cord Injury Educational Conference, in Phoenix. In one of the sessions, a panel of practitioners from the Arizona Pain Treatment Center discussed the use of alternative health practices in the SCI population. Attendees learned about many areas of holistic medicine--a system of therapies outside the mainstream of scientific medicine; John Doe's success

with FES was just one example.

Dr. John Porter, a specialist in physical medicine and rehabilitation, spoke on the benefits of a wide array of natural health therapies. He pointed out that natural health treatments have thrived for more than 2,000 years, while modern medicine has only been around since the early 1900s. The longevity of natural health practices can be documented in the Chinese and Indian cultures beginning with the writing of the Medical Classic of the Yellow Emperor in 475 BC.

Dr. Porter says we all have an invisible energy flow that helps keep our body's systems in harmony. It's not difficult to accept the idea of invisible energy. We have it around us every day in the forms of coal, air turbulence, tornadoes, and even thought.

Dr. Porter explained how all the natural healing practices contain aspects of nutrition, lifestyle, medicines, and herbs. He also discussed how a person's beliefs are directly translated into physical reality because of the energy involved. The underlying plan for healing is to regain harmony for a person's physical, mental, emotional, and spiritual states.

The presentation touched upon several therapies, These are considered "complementary therapies," to be used in conjunction with current medicine. The primary focus was on various styles of bodywork, or physical techniques. These include acupuncture, herbs, homeopathy, electrical stimulation, **botox** injections, chiropractic adjustments, massage, accupressure, craniosacral therapy, osteopathy, aromatherapy, magnets, naturopathy, breathing techniques, herbs, yoga, macrobiotics, physical therapy, tai chi, reiki, qi gong; reflexology, shiatsu, moxibustion, biofeedback, and hypnosis.

James Adkins, a doctor of chiropractic medicine, discussed his field's beneficial effects. He believes 85% of illnesses are spine related. In the SCI population, he has found benefits through chiropractic treatments for people with muscle spasms, tendinitis, carpal tunnel, back pain, headaches, and rotator-cuff dysfunction.

Dr. Adkins said chiropractic treatment is more than just "popping your back." Treatments include myofascial (muscle and sheathing) release, manipulation, stretching, and exercise. He explained that the pain relief part could be very important for people with SCI because it can reduce the need for pain-relieving drugs. He quoted a long-term study showing a 2.4x increase in kidney disease when someone ingests one Tylenol analgesic/acetaminophen tablet every four days. Ibuprofen was worse, with an increase of 8.8x when taken every four days. He strongly suggests seeking an alternative therapy for pain management.

SPEAKING OF PAIN

Robert O'Connor, a highly regarded certified hypnotherapist, concluded the presentation. He spoke of hypnosis as being used as anesthesia in more than 30,000 surgeries in World Wars I and II. He was trained in this technique and used it while he was a combat medic in Korea. He still practices and was recently called to hypnotize an 84-year-old woman who was having a double mastectomy. She underwent surgery pain-free and with minimal blood loss, because that was controlled through hypnosis, as well.

O'Connor discussed the fact that pain requires focus. If the mind is distracted, the pain does not register. For example, there is no pain while you sleep.

He pointed out that your thoughts can heighten your pain and concluded by recommending deep-breathing practices, explaining that these techniques draw your focus to your breath rather than your pain, while providing scientifically proven health benefits.

AGING & SCI

Dr. Alan F. Crosby of the Tucson VA Hospital told the audience that the SCI community is definitely aging. Before 1940, people with SCI had a post-injury life expectancy of two to seven years, and they would likely die from kidney failure. With the discovery of penicillin in 1945, their longevity increased dramatically. Today, the average age for someone with SCI is 30 at the time of injury. Life expectancy is 62.

In the general population, the body's systems decline in function and ability as we grow olden The same is true for people with SCI. The main systems affected are:

* Gastrointestinal (GI). Decreased motility and acid production. For the SCI population, findings vary due to differences in age, diet, and prior-health history. These individuals have an increased incidence of gallstones (seven times the average) and colorectal problems such as constipation, hemorrhoids, and incontinence.

* Genitourinary (GU). Decreased bladder capacity, filtration, and control; increased contractions and residual volume. People with SCI show an increased incidence of urinary-tract infections (UTIs), prostate problems, and cancer (from 0.3% to 2.8%, depending on the study).

Kidney trouble is not the end of the world, however. Of able-bodied adults with kidney failure, 80% survive the one-year standard with dialysis, and 60% of SCI individuals reach the one-year mark with dialysis. Get those BUN/Creatinine studies yearly!

* Respiratory. Decreased elasticity and muscle fibers, stiffness in rib joints. For SCI, decreased vital lung capacity and increased risk of pneumonia.

* Musculoskeletal. Softer cartilage, decreased ability of the cartilage to bind with water, decreased shock absorption, increased incidence of arthritis and bone spurs (10% above injury, 35% below, most near injury site), increased neck and back pain, increased osteoporosis (0.3-0.5% annual bone loss), 50% greater incidence of injury to shoulders and upper extremities, and 30% greater risk for fractures. For SCI, transfer pressure on joints is 2.5 times more than normal, which leads to shoulder problems in 89% of SCI women and 62% of SCI men.

* Cardiovascular. Intimal (organ lining) cells change, increased connective tissue and decreased elasticity. For SCI, quads have 35% increased risk; paras, 29%. Many people with SCI exhibit syndrome X, a condition with obesity in the trunk, increased insulin and triglyceride levels, and decreased good cholesterol (HDL). Cardiovascular disease accounts for 20% of all SCI deaths. It is the most common cause in the able-bodied population. Of SCI patients tested, 50% showed signs of diabetes or glucose abnormality. (Cut down on fats and sweets!)

* Skin. Decreased vitamin D production, temperature control, sweating, skinfold thickness, vascularity, elasticity, collagen, fluid-balance control, sensation, and immune-system function. For SCI, increased risk of **pressure sores** , dermatitis, infections, and skin cancer. Pressure ulcers are not obesity related; thin SCI patients have a higher occurrence.

* Nervous system. Decreased strength, reactions, nerve conductivity, autonomic nervous system function; increased sensory and motor loss and neurotransmitter sensitivity. Impaired temperature control and baroreceptors. For SCI, decreased function and sensation, increased episodes of autonomic dysreflexia, more risk for carpal tunnel (26-67% depending on the study), 20% increased risk of ulnar entrapment, and increased cystic myelopathy and pain.

* Immune system: Increased risk of infection, pain, and depression. Decreased social activity has a negative effect on the immune system.

You can alleviate or even prevent some of the secondary complications listed above. (See Improve Your Overall Health and Quality of Life.)

Improve Your Overall Health and Quality of Life

* Have daily bowel movements

* Decrease the use of enemas and laxatives

* Decrease the risk of UTIs by using good technique

* Make appropriate diet changes

* Increase water intake

* Have a GU follow-up

* Stop smoking

* Review your transfer techniques

* Exercise regularly

* Lie prone as often as possible

* Use sunscreen (SPF 15 or higher)

* Do daily skin checks

* Check your vital lung capacity

* Get the pneumonia vaccine

* Have regular flu shots

* Control your weight

* Take medications on schedule

PATTERNED NEURAL ACTIVITY

A study explained by Dr. John McDonald shows definite benefits for SCI patients using functional electrical stimulation (FES) bicycles. Dr. McDonald is an assistant professor of neurology and neurological surgery at the Washington University School of Medicine and director of the SCI Program at Barnes-Jewish Hospital & Rehabilitation Institute in St. Louis. His research focused on regeneration of the damaged spinal cord. His research group is working on remyelinization as a strategy for restoring function in the injured nervous system. Their studies include embryonic stem-cell transplantation and activity-based restoration.

Dr. McDonald discussed the results of a three-year project involving multiple SCI patients with various levels of injury and varying lengths of time postinjury. The study included participants with injuries as high as C2 and postinjury time as far out as 20 years.

He said early data from his clinical work indicates people who use the bicycle for one hour at a time, three times a week, can avoid many of the physical complications associated with SCI, while animal research in the lab shows the activity can stimulate new cell growth and activity.

Dr. McDonald pointed out that the conditions to optimize spontaneous regeneration are not present after SCI, and some are counteracted by certain medications such as Baclofen and Valium. A growing body of evidence indicates that one of the conditions to aid spontaneous regeneration is patterned neural activity.

Simply stated, this is the establishment of nervous-system pathways caused by repetition of an activity--in this case, electrical stimulation of certain muscle groups in a prearranged pattern. This results in formation of a neural pattern.

To achieve this through FES, the therapy took place three times a week for one hour each session. The participant is seated on a bicycle-type piece of equipment with electrodes attached to the calf- and thigh-muscle groups. These electrodes are then fired in a sequence that controls each leg to simulate riding a bicycle. The hour-long session provides 3,000 repetitions, a far cry from the average 12,000 steps a person takes each day--yet, it is producing results.

Dr. McDonald presented the case of John Doe described at the beginning of this article.

"That's a remarkable change in quality of life," says Dr. McDonald.

In addition to decreasing the patient's complications, the FES therapy provided benefits. The man began the study with motor, light-touch, and pinprick scores of 0. These are determined by rating 28 different muscle groups with a range of 1-5 for a total of 140. After three years of FES therapy at one-hour sessions three times a week, the subject has motor scores of 20. Although this may not seem like much, it is significant because the best increase in motor scores after methylprednisolone use has been 4.8, nowhere near the 20 shown by this individual. (Methylprednisolone is the steroid injection given to control swelling and inflammation after SCI; it must be given within 48 hours after the trauma.)

"FES therapy is showing better results and has no time limit

11452764 EMBASE No: 2002022740

Treatment of pressure ulcers by serial casting in patients with severe spasticity of cerebral origin

Pohl M.; Ruckriem S.; Strik H.; Hortinger B.; Meissner D.; Mehrholz J.; Pause M.

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CODEN: APMHA ISSN: 0003-9993

DOCUMENT TYPE: Journal ; Article

LANGUAGE: ENGLISH SUMMARY LANGUAGE: ENGLISH

NUMBER OF REFERENCES: 35

Objective: To assess the effectiveness of serial casting in the treatment of pressure ulcers caused by severe spasticity. Design: Case series. Setting: A clinic for the rehabilitation of persons with neurologic disorders. Patients: Nine patients with 11 pressure ulcers resulting from severe cerebral spasticity, the ulcers being intractable to conventional management because of repeated friction and/or inaccessibility. Intervention: Serial casting of the limb(s) with the pressure ulcer(s), with either fenestration or a cast arch providing access to the wound. Main Outcome Measures: Improved healing of pressure ulcers, as quantified with the National Pressure Ulcer Advisory Panel classification system. Results: Within a mean of 4.6 weeks, 7 ulcers healed completely and 4 improved markedly. The casting caused no complications. Moreover, extension deficits improved markedly in all patients (105degrees +/- 27degrees to 17degrees +/- 10degrees). Conclusion: Serial casting may be a valuable tool in the treatment of pressure ulcers at the extremities of patients with severe cerebral spasticity. (c) 2002 by the American Congress of Rehabilitation Medicine and the American Academy of Physical Medicine and Rehabilitation.

DEVICE BRAND NAME/MANUFACTURER NAME: Cellacast Xtra; Scotchcast

DRUG DESCRIPTORS:

elase--drug therapy--dt; povidone iodine--drug therapy--dt; sodium--drug therapy--dt; spasmolytic agent--drug therapy--dt; spasmolytic agent --intrathecal drug administration--tl; spasmolytic agent--oral drug administration--po; phenol--drug therapy--dt; **botulinum** toxin A--drug therapy--dt; baclofen--drug therapy--dt; baclofen--intrathecal drug administration--tl; baclofen--oral drug administration--po; tizanidine --drug therapy--dt; tizanidine--oral drug administration--po

MEDICAL DESCRIPTORS:

* **decubitus** --complication--co; * **decubitus** --therapy--th; *plaster cast; * spasticity--drug therapy--dt

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Questions or comments about this article may be directed to: Susan M. Calne, CM RN, by phone at 604/822-7705 or by e-mail at scalne@interchange.ubc.ca. She is a coordinator at the Pacific Parkinson's Research Centre, Vancouver, BC, Canada.

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DESCRIPTORS: Parkinson's disease--Care and treatment; Parkinson's disease--Research
EVENT CODES/NAMES: 310 Science & research

16/9/16 (Item 5 from file: 149)

DIALOG(R)File 149:TGG Health&Wellness DB(SM)

02187037 SUPPLIER NUMBER: 100962508 (THIS IS THE FULL TEXT)

Intrathecal baclofen for the treatment of spasticity of cerebral origin. (Ask the Expert).(nurses monitoring children receiving intrathecal baclofen therapy should be aware of possible complications)(Column)

Disabato, Jennifer; Ritchie, Anne

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2003
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LANGUAGE: English RECORD TYPE: Fulltext TARGET AUDIENCE: Academic; Professional
WORD COUNT: 2487 LINE COUNT: 00212

TEXT:

Ask the Expert provides research-based answers to practice questions submitted by JSPN readers.

Question: I am seeing many children in the community with implanted baclofen pumps to ease the spasticity of cerebral palsy. Why is this treatment becoming more common, and what do I need to know about it?

Jennifer Disabato and Anne Ritchie respond: Historically, children who suffered from moderate to severe spasticity as a result of cerebral palsy or acquired brain injury have had limited treatment options. Traditional treatments have included intense physical therapy, oral antispasmodic agents, orthotics, **botulinum** toxin injections, orthopedic surgery, and in some cases neuroablative procedures (selective posterior dorsal rhizotomy). Initially approved for the treatment of spasticity of spinal origin, intrathecal baclofen (ITB) was approved for use in the management of spasticity of cerebral origin in 1996 (Medtronic, 1996). ITB offers an option for treatment at the source of the physiologic abnormality in the spinal cord (Albright, Barron, Fasik, Polinco, & Janosky, 1993; Armstrong et al., 1997).

In ITB therapy a surgically implanted pump delivers precise amounts of baclofen directly and continuously into the cerebrospinal fluid (CSF) to inhibit spinal reflexes. Oral baclofen is limited in its ability to treat severe spasticity because the doses required to reach therapeutic concentrations in the CSF would produce unacceptable systemic side effects such as lethargy, confusion, and drowsiness. By delivering the medication directly and continuously into the CSF, less medication is needed to achieve acceptable outcomes (Albright, 1995). ITB is delivered via a Synchromed Infusion Systemc, which consists of a pump that holds 18 mL of medication, a spinal catheter, and an external computer programmer that allows specific dosing parameters via telemetry. Children who are candidates for ITB must be physically able to support the pump weight and have adequate space between the lower aspect of the rib cage and the pelvic girdle. As more outcome data are published, ITB is being used earlier in the treatment plan in selected patients (Medtronic, 1996).

Initiation of ITB Therapy

Prior to ITB therapy, the patient, family caregivers, and spasticity treatment team establish clear-treatment goals. Children who ambulate with the assistance of crutches or walkers may have a goal of independent ambulation, while those with minimal motor function may undergo ITB implantation to facilitate care and comfort and prevent complications of immobility (Gerszten, Albright, & Barry, 1997). The tone management team evaluating the child ideally includes a nurse coordinator, pediatric physiatrist, physical therapist, orthopedic surgeon, neurosurgeon, and social worker.

After the child is evaluated and meets the criteria for ITB therapy; a trial dose of medication is administered by either lumbar puncture or an implanted spinal catheter. An initial bolus of 50 (mu)g of baclofen is injected and the child is monitored closely for response to the dose and any adverse effects. Prior to the test dose injection and for several hours, the child's spasticity is evaluated by physical therapists using the Ashworth scale to describe changes in muscle tone (Ashworth, 1964). In most children, a reduction in tone is noted within 1 hour after administration with peak effects of the medication in about 4 hours. If the initial dose does not produce a decrease in tone, the dose is repeated daily and increased in 25-(mu)g increments to an upper limit of 100 (mu)g. A child who responds appropriately to the test dose and shows no adverse side effects is scheduled for surgical implantation of the catheter and pump.

The pump is implanted under general anesthesia by a neurosurgeon. A thorough preoperative evaluation is necessary because many children with severe spasticity have associated medical problems. The child's dose of oral baclofen will be tapered a few days preoperatively. Prior to implantation the pump is prepared and filled with baclofen in the operating room by clinic or surgical nursing staff who are trained in the procedures. As with other intrathecal medications, preservative-free saline or water

someone stretches your muscle, it fires the reflex connection much stronger than before; this is the basis for spasticity.

Reflex axons grow new synapses weeks to months after injury. This is believed to occur because vacant synaptic sites on the neurons are left by the degenerating fibers from above. We believe the LMNs that lose normal UMN input due to injury have vacant synaptic sites and this elicits release of neurotrophins and other growth factors that stimulate synapse growth by whatever inputs remain. Spasticity becomes stronger three to six months after SCI, as these new reflex synaptic contacts grow.

Spasticity appears in many varieties. With extensor spasms the legs straighten out; this can be severe and throw people out of their wheelchairs. Flexor spasms pull the legs up toward the chest. Clonus causes repetitive jumping of the muscle, often at the ankle, causing the foot to bounce repeatedly on the footrest.

Spasticity can be beneficial or detrimental. It can interfere with function and quality of life by:

* Impairing balance, endurance, or transfers
* Hindering the patient's or the partner's sleep
* Causing **pressure sores**
* Contributing to pain

On the other hand, some people learn to use their spasms to assist with transfers or standing. Spasticity can help maintain muscle bulk, stimulate blood flow, and increase bone strength.

When it comes to deciding how aggressive to be about treating spasticity, you have to weigh its positive and negative aspects. In considering treatment, physicians must distinguish spasticity from contractures (i.e., muscle tightness) and from weakness, as causes of disability.

TREATMENT OPTIONS

The least invasive treatments are used first, followed by more invasive ones, if necessary. Sometimes reducing pain will decrease spasticity--even if a person doesn't feel pain.

Daily stretching can reduce spasticity for several hours; it is most effective if the stretch is held for 60 seconds and if it is repeated three to five times per day.

Special equipment can reduce some spasticity. For example, spasticity that is triggered when reclining or doing pressure releases can be avoided by using a tilt-in-space pressure-relief system. Braces may reduce spasticity.

Medications that act like inhibitory neuro transmitters in the spinal cord can reduce the exaggerated reflexes that cause spasticity. These include diazepam, baclofen, clonidine, and tizanidine. Taking one or several of these oral medications can reduce spasticity for several hours but may not be sufficient to control severe spasticity.

Baclofen can also be delivered directly to the target spinal-cord nerve cells using an intrathecal catheter (i.e., tube into the spinal canal) and a pump device implanted under the skin. This method reduces baclofen's side effects because only tiny doses are needed. The downside is that surgery is required to implant the system, and the pump needs to be refilled every two or three months. The entire pump must be replaced every four or five years.

Chemical nerve blocks can also suppress spasticity. **Botulinum** toxin injections into muscle reduce spasticity by degenerating nerve synapses onto muscle. This is safe and effective, but it is expensive and wears off after three to six months. Repeated injections may be needed.

Alcohol and phenol injections block nerves locally, reducing spasticity in the muscle stimulated by those specific nerves. Such blocks are inexpensive, partially effective, and relatively long-lasting (e.g., 6-12 months).

An invasive spasticity treatment option is lumbar myelotomy, a surgical procedure in which a cut is made in the spinal cord to disconnect reflex pathways. This is quite effective in eliminating spasticity, but it is a last resort because it permanently and irreversibly changes the spinal cord's anatomy.

AVENUES OF RESEARCH

One major focus of SCI research today is weight-supported ambulation. In this treatment, patients are supported in a harness and assisted to make

stepping motions on a treadmill. Some evidence indicates this can enhance recovery and may lessen spasticity.

One research idea is that spasticity may interfere with recovery in people with incomplete SCI, by blocking some synaptic growth that might allow recovery. UMNs that are spared can grow new synaptic connections and mediate some recovery, but they may be competing for vacant synaptic sites with the reflex inputs, which are growing new synapses as well (Figure 1).

(FIGURE 1 OMITTED)

We have postulated that spasticity resulting from synapse growth by reflex inputs may interfere with the potential for recovery of voluntary movement, We worked with one man with C4 incomplete tetraplegia who began to have some recovery in his left elbow extensor muscles. But 90 days postinjury this recovery stopped, at the same time spasticity began to develop.

We injected low-concentration alcohol into the spastic elbow-extensor muscles because it can reduce spasticity, yet spare most voluntary movement. The patient improved his voluntary elbow movements after this alcohol block.

This observation supports the idea that spasticity can interfere with recovery of voluntary movement in some patients. We have received a grant from the American Paraplegia Society to investigate whether early spasticity treatment may yield some additional recovery.

Another research focus is spinal-cord regeneration. Spasticity treatment may play a role in spinal-cord regeneration modalities. Recent breakthroughs in axonal regeneration research have determined that neurons do not regrow across the damaged area of the spinal cord because the myelin (the insulation surrounding the nerve fibers) in the central nervous system has proteins that inhibit long-distance growth. By contrast, the myelin of peripheral nerves supports long-distance growth. Researchers have grafted peripheral-nerve sections into damaged spinal cords of rats, adding growth factors to encourage axonal regrowth. As a result, these rats were able to voluntarily move their legs. It wasn't functional walking, but it's huge progress from what was possible ten years ago.

Once these axons grow across the SCI, the next problem is getting them to make new synaptic connections with the normal neurons on the other side (Figure 2). Growth factors can assist with this, but we conjecture that by the time the axons grow across the gap, all the vacant synaptic sites may be occupied by growth of reflex synapses that cause spasticity. It may be necessary to destabilize reflex synapses to make more synaptic sites available for axons growing down from the brain (i.e., UMNs) to make functional connections.

(FIGURE 2 OMITTED)

If we get to the point that we can regenerate axons, one aspect of treatment to optimize regeneration recovery may be to reduce spasticity at the critical time, to destabilize some of the reflex synapses causing spasticity, and to try to open up vacant synaptic sites.

Spasticity Guide Considered

The Consortium for Spinal Cord Medicine, a group of experts from 20 organizations that is administered and funded primarily by PVA, is developing topics for future clinical practice guidelines (CPGs). Among the subjects under consideration is the prevention and treatment of spasticity.

Publications by the consortium, which began developing CPGs in 1995, give healthcare providers cutting-edge information on the latest methods for preventing and treating troublesome complications after spinal-cord injury. Companion consumer guides often are available.

Contact: PVA Distribution Center, (888) 860-7244, or visit the PVA Web site, www.pva.org.

RELATED ARTICLE: Common medicines for spasticity.

Tom Kiser, M.D.

When the spinal cord is damaged, the resulting medical problems vary depending on the location and amount of irreversible damage. The need for medicines varies because no two spinal-cord injuries are exactly the same.

Spasticity medication is used to decrease negative aspects such as poor motor control, discomfort, muscle jerks, and functional problems with transfers and wheelchair seating. However, we don't want to eliminate the positive issues, including decreased muscle atrophy, tone to enable standing and lower-extremity movement, and even bladder spasms to enhance

bladder emptying.

The most common medications for treating spasticity are baclofen (Lioresal), tizanidine (Zanaflex), and diazepam (Valium). Others that can be tried are gabapentin (Neurontin) and dantrolene (Dantrium).

Diazepam

I have not found the need to use diazepam in new patients with SCI; it has addictive potential and secondary issues. However, I continue to prescribe it for people who have been on it for a long time because it is difficult to get off due to withdrawal problems. It requires a slow taper and extreme effort on the part of the patient. Other medication can be used to minimize withdrawal's side effects.

Baclofen

Baclofen has been a treatment for spasticity for years and is my first choice. It is safe, and there have been no reports of liver toxicity even at high dosages. The only problem is that you cannot suddenly stop taking it, or you may have severe withdrawal symptoms (hallucinations, agitation, and even seizures).

If your medicine is running low or you can't ingest anything for a few days following surgery, taper to a low dose before stopping it entirely. A normal daily dose is 10-80+ mg (divided doses). Oral baclofen's effect lasts about six hours, so it is prescribed three or four times a day.

Some spinal-cord physicians push the dose higher (120-140 mg a day) to control spasticity or until the side effects of lethargy and drowsiness prevent higher dosages. I often add a second medication such as tizanidine (Zanaflex) before doing this because it acts by a different mechanism and often gives a beneficial boost to spasticity control.

Tizanidine

As mentioned above, this drug can be used with baclofen but is beneficial by itself. Its main side effect is drowsiness, but it can also cause dry mouth, low blood pressure, and (rarely) visual hallucinations. I often start it as a bedtime dose because it helps with sleep. I then very slowly start a low dose during daytime hours. The side effect of drowsiness slowly wears off.

Tizanidine can raise liver enzymes, so periodically checking laboratory values is necessary. It does not have the same problem of withdrawal that baclofen has, and this may be important in some people who have problems taking their medication as scheduled.

Gabapentin

This is a good medication to help decrease the burning, deep, hard-to-describe neuropathic pain associated with SCI. However, it also has an antispasticity effect and in patients with pain and spasticity it is a good choice. The normal dosage is 100-3,600 mg in divided doses. It is a seizure medication; its main side effect is drowsiness, but this is usually less than that associated with baclofen or tizanidine. Gabapentin is cleared by the kidneys and does not cross react with many other medications.

Dantrolene

This one inhibits the release of calcium needed for the muscles to move and thus decreases spasticity at the muscle level. It can make you drowsy, but this side effect is minimal. The normal dosage is 25-400 mg a day, divided into three or four doses. The main drawback is liver toxicity. Laboratory tests must be done to assess any liver problems, which are reversible if caught early.

If oral medications fail to control your spasticity, the intrathecal baclofen pump is available.

Living with spasticity successfully is now possible, no matter how bad your spasticity is.

Dr. Tom Kiser is Arkansas Spinal Cord Commission (ASCC) medical director. This article appeared in the January 2004 Spinal Courier, ASCC's quarterly publication, and is used by permission.

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Updated for PN in February 2004 by Drs. Little and Sepahpanah, the original article by Cynthia Salzman, M.H.A., Northwest Regional SCI System, University of Washington, appears on the Web site http://depts.washington.edu/rehab/sci/spasticity.html. Used by permission.

Dr. Little is assistant chief, SCI Service, VA Seattle and professor,

must be used for medication dilution and flushing. The spinal catheter is implanted in the intrathecal space first, and placement is confirmed with an intraoperative radiograph (Kamensek, 1999). The ideal placement of the catheter tip is at the lower thoracic level although some recommend midthoracic placement for greater relief of upper extremity spasticity in patients with spastic quadriparesis (Grubb, Guin-Renfroe, & Meythaler, 1999). The pump is then placed in a Dacron pouch and sutured into a subcutaneous pocket created in the abdomen. Next, the spinal catheter is tunneled to the pump. The pump is turned on with the computer and telemetry wand prior to the patient leaving the operating room or in the postanesthesia care unit. The surgical procedure takes about 2 hours and the child usually remains in the hospital for 3 to 4 days to enable individualized dose titration and recovery from the procedure. Dose adjustments are made gradually, but may start within hours after surgery (Medtronic, 1996; Rawlins, 1998).

Immediate postoperative complications include the development of an intestinal ileus, hematoma, or seroma around the pump or catheter entry into the lumbar area. A small amount of discomfort at the incision sites and from bruising around the pump location is expected (Rawlins, 1998). Local site infection and meningitis are complications that may occur within the first several weeks postimplantation (Bennett, Tai, & Symonds, 1994). Some centers recommend decreased mobility for several days after implantation to avoid local trauma to the pump implant site.

Maintenance of ITB Therapy

Follow-up with the physiatrist, nurse coordinator, and neurosurgeon is arranged for 2 weeks postsurgery. Subsequent appointments with the tone management team take place every 1 to 3 months for pump refills and assessment of tone. The dose of ITB required or tolerated will determine how frequently the pump needs to be refilled. The pump has an internal alarm system that will activate at a predetermined low volume. Pump refill visits are scheduled with the nurse in the outpatient clinic well in advance of the expected pump alarm date. The child does not have to be sedated for the procedure, but a topical anesthetic is applied to the skin over the pump access port prior to the procedure. The nurse performing the procedure determines the dose being infused and the amount remaining with the telemetry wand. A noncoring needle is inserted through the skin into the pump reservoir after sterile preparation. Any remaining medication is removed with a syringe, and the amount is cross-checked with what the computer reads as the expected residual amount. The baclofen is then injected into the pump slowly. Any changes in dosing are made at the visit, but the effects of the changes usually are not noted until 2 to 4 hours later.

Generally, 6 months are required to achieve optimal dosing of the medication. The device can be programmed to deliver a higher dose of the medication at certain intervals in a 24-hour period to decrease tone during specific activities or to assist in relaxation during sleep (Rawlins, 1998). The battery life of the infusion pump is approximately 3 to 5 years, with replacement accomplished in a brief surgical procedure. Dosing decisions are made cautiously after pump replacement, as the pump may not have been functioning optimally prior to replacement. There is a potential risk of drug overdose if this is not taken into account.

Nursing Care, Family Education, and Improvements in Quality of Life

The expected decrease in tone seen with ITB therapy affects many organ systems. Nursing care of these patients can be challenging. There is a fine balance between improving tone and not decreasing function, which may take several months of follow-up and dose titration. The nurse is responsible for monitoring the systemic changes and their impact on the overall function of the child and family caregivers (Kamansek, 1999; Rawlins, 1998; Vitzum & Olney; 2000).

A decrease in the tone of the upper and lower respiratory systems can lead to improvements in control of breathing and speech skills, but also may result in decreased tone of upper airway structures and obstructive sleep apnea. Weight gain has been reported secondary to improved oral motor control and swallowing, as well as a decrease in caloric needs as spastic movements are relieved (Rawlins, 1998). For some patients, excessive weight gain can be a problem, and decreased oral tone can lead to choking and risk of aspiration. Decreased gastrointestinal motility may lead to chronic

constipation.

Musculoskeletal system benefits from ITB include a decrease in joint contractures and fractures. Most patients are able to transfer in and out of seating devices and wheelchairs with greater ease and have improved access to communication devices. In contrast, the decrease in trunk control can lead to scoliosis, which may require treatment at a later date. Usually patients benefit from a decrease in skin breakdown, although for some the decrease in movement actually contributes to isolated **pressure sores**.

Nursing care also must be aimed at observation for signs and symptoms of complications related to malfunction of the pump or intrathecal catheter including kinking, leaking, or dislodgment. Catheter problems are reported to occur in approximately 20% of patients (Albright, 1996). Sudden withdrawal is characterized by exaggerated muscle rigidity, clonus, spasms, high fever, pruritus, and altered mental status (Coffey et al., 2002). The nurse's challenge is to determine whether the signs and symptoms are related to other factors, such as a viral illness or constipation, or whether they represent a serious problem with the catheter or pump. Withdrawal symptoms and an audible pump alarm occur when patients miss their scheduled pump refill visits (Coffey et al.; Kamansek, 1999).

Drug overdose is characterized primarily by unresponsiveness and profound hypotonia (Coffey et al., 2002). If catheter problems are suspected, a radiographic dye study may be performed. Caution must be taken since a bolus dose of medication may result as medication is pushed through the catheter ahead of the dye (Albright, 1996). Members of the tone management team are experts at recognizing and managing these problems and should be notified immediately if signs and symptoms of medication withdrawal/overdose or audible pump alarms are noted by care providers in the community and school settings.

Children and families who undergo ITB therapy can experience a significant improvement in daily activities and social acceptance. Activities that many children take for granted can be extremely difficult for those who suffer from severe spasticity and debilitating clonus. Without the interference of spasticity, communication improves either through advances in verbal skills or the ability to access a communication device. Most children experience a significant increase in overall comfort leading to an increase in social interaction with peers. Parents often report that travel in both cars and airplanes is made easier as seating systems can often be streamlined and less cumbersome to handle.

Summary

Nurses monitoring children receiving intrathecal baclofen therapy can assist with management of these patients by being aware of possible complications related to a change in tone, medication withdrawal, or overdose. The tone management team relies on family care providers, school nurses, ambulatory clinic nurses, and outside physical and occupational therapists to provide information and updates on changes in patient status as needed. Close collaboration and communication regarding the child and his/her response to ITB is essential to providing safe and effective care for this challenging population of patients.

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☐	L1	bed near sore	1108
☐	L2	(botox or bo-tox or botulin or botulinum or botulism)	1391
☐	L3	(clostrid$ near3 $toxin) or neurotoxin or neuro-toxin or toxin or cytotoxin	22294
☐	L4	l1 same (l2 or L3)	9
☐	L5	(l2 or l3).clm. same (method or process).clm.	1392
☐	L6	L5 and (ulcer or decubit$ or skin).clm.	54
☐	L7	pressure.clm. same sore.clm.	64
☐	L8	L7 and l2.clm.	0
☐	L9	L7 and l3.clm.	2
☐	L10	pressure near3 sore	1023
☐	L11	L10 and (l2 or l3)	74
☐	L12	L10 same (l2 or l3)	1
☐	L13	L11 not l12	73
☐	L14	(bont or botx or botx-a or bont-a or botxa).clm. or l2.clm.	200
☐	L15	L14 and (ulcer or wound or skin or eyelid or eye or lid or scalp or feet or foot or groin or arm or armpit or bacteria or bacterial or fungus or fungal).clm.	55
☐	L16	bedsore.clm. same l2.clm.	0
☐	L17	ulcer.clm. same l2.clm.	1
☐	L18	L14 and (bedsore or ulcer or wound).clm. not l15	0
☐	L19	L18	0
☐	L20	chalazion	39
☐	L21	chalazion and (l2 or l14 or l3)	7
☐	L22	meibomian	135
☐	L23	L22 same (l2 or l3 or l14)	0
☐	L24	l14 and hordeola	0
☐	L25	l14 and sebaceous	2
☐	L26	l14 and (mucos$ or mucous$).clm.	4
☐	L27	5670484.pn.	1

END OF SEARCH HISTORY

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☐ 49. 20020142010. 22 May 02. 03 Oct 02. Method and compositions for the treatment of cerebral palsy. Graham, Herbert Kerr. 424/247.1; A61K039/08.

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☐ 103. WO2004035011A. Method for assisting a dental procedure involves administering a botulinum toxin to a mastication muscle to weaken and de-program the muscle, and conducting a dental procedure. BLUMENFELD, A M, et al. A61C005/00 A61K006/00 A61K007/28.

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☐ 105. US20040062776A. Treatment of fibromyalgia involves administering botulinum toxin to patient afflicted with fibromyalgia. VOET, M A. A61K039/08.

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☐ 136. WO 200209743A. Treating neoplasm e.g., paraganglioma or glomus tumor by locally administering botulinum toxin to the neoplasm such that the size and/or secretory activity of the neoplasm is reduced. DONOVAN, S. A61K038/48 A61P035/00.

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☐ 138. WO 200207759A. Treating bone tumor and associated pain, by administering conjugate of clostridial neurotoxin and, as targeting agent, a compound released from neurons. DONOVAN, S. A61K038/16 A61K038/48 A61P029/02 A61P035/00 C07K014/33 C07K019/00.

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☐ 141. US 6312708B. Botulinum toxin delivery system for treating movement disorders comprises a carrier and a botulinum toxin associated with it. DONOVAN, S. A61K039/00 A61K039/02.

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☐ 143. US 6358513B. Treating hypothyroidism of Hashimoto's thyroiditis, comprises administering a neurotoxin to a patient. DONOVAN, S, et al. A61K038/00 A61K038/16 A61K039/08 A61P005/14 C07K014/00 C07K017/00.

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☐ 145. US 6447785B. Treatment of thyroid disorders, notably hypo- and hyper- thyroidism and calcemia, comprises local administration to the thyroid or its nerve ganglion, of a neurotoxin, particularly botulinum toxin. DONOVAN, S. A61K038/00 A61K038/16 A61K038/43 A61K038/44 A61K038/48 A61K038/51 A61K038/52 A61K039/02 A61K039/08 A61K045/00 A61P005/14 A61P005/16.

☐ 146. WO 200158472A. Neurotoxin compositions useful in treating neuromuscular disorders, include, e.g. a polysaccharide or amino acid as an albumin substitute, reducing risk of prion transmission. HUNT, T J. A61K009/08 A61K009/14 A61K009/19 A61K038/00 A61K038/16 A61K038/46 A61K039/08 A61K045/00 A61K047/16 A61K047/18 A61K047/22 A61K047/36 A61K047/42 A61M005/19 A61M005/24 A61M005/28 A61P021/00 A61P021/02 A61P025/00 A61P027/02.

☐ 147. US 6372226B. Treatment of pain e.g. inflammatory pain involves intraspinal administration of a neurotoxin to a mammal. AOKI, K R, et al. A61K038/16 A61K039/02.

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(54) METHODS FOR TREATING CARDIOVASCULAR DISEASES WITH BOTULINUM TOXIN

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(57) ABSTRACT

The present invention provides for methods of treating cardiovascular diseases in a mammal. The methods include a step of administering an effective amount of a botulinum toxin directly to a blood vessel of a mammal thereby treating a cardiovascular disease.